Food Revolution in Europe p.39
Interurbia Keys Label Crisis p.46
Panels 'Robot' Bulk Foods p.70

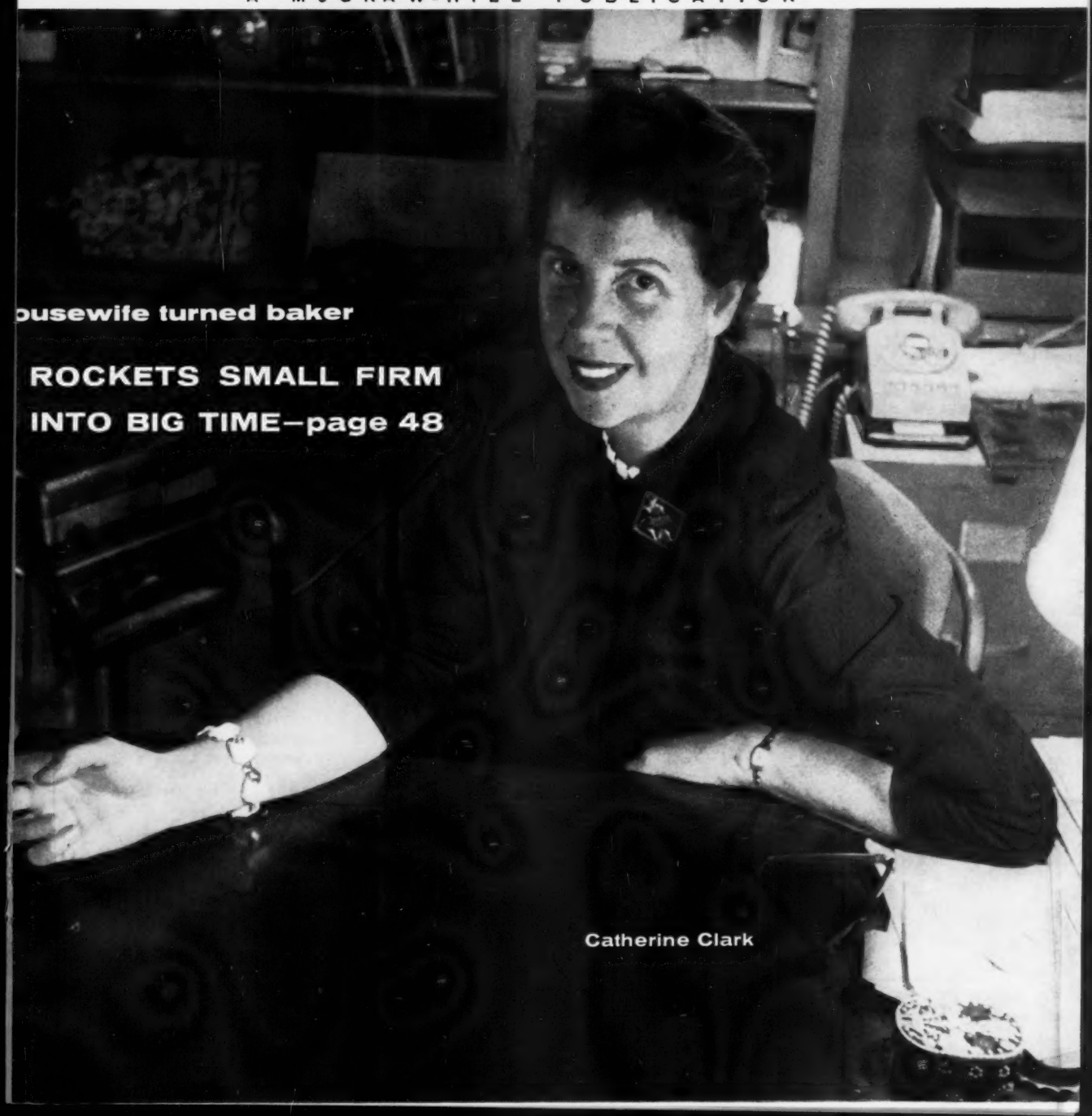
SEPTEMER 1959

$1.00

FOOD ENGINEERING

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION



ousewife turned baker

ROCKETS SMALL FIRM
INTO BIG TIME—page 48

Catherine Clark

How *Sterwin* Puts More Profit Into Food Products!

If your food product requires enrichment, color, flavor...then STERWIN can help you save time, money, labor . . . so give you more profit.

For STERWIN offers unique extras in vitamins, colors, vanillin, and these superior ingredients are fitted into your production picture by experts with years of practical and technical experience. These STERWIN Technically Trained Representatives have cut time, expense, production steps for manufacturers producing a widely varied range of food products: candy, bread, margarine, soda, fruit juice, cereals . . . to name just a few.

STERWIN ingredients are delivered when you want them, in the quantity you need. Keeping delivery promises is a STERWIN tradition that helps keep your production at top efficiency.

For new production set-ups or to improve an existing one . . . see your local STERWIN Representative . . . costs you nothing . . . can profit you plenty.

You get these extras when you buy:

STERWIN VITAMINS . . . *the most complete line* in the field . . . immediate delivery in any quantity.

STERWIN COLORS . . . Parakeet Certified F.D.&C. . . . backed by a *highly experienced technical staff* to help you with your color problems.

STERWIN VANILLIN . . . pure, ZIMCO® U.S.P. Vanillin . . . *unlimited supply* of basic material from world's largest vanillin producer.

Sterwin Chemicals INC.

Subsidiary of Sterling Drug Inc.

1450 Broadway, New York 18, N. Y.

LAckawanna 4-6400

STOCKS AVAILABLE AT: Atlanta, Buffalo, Dallas, Denver, Evanston, Ill., Kansas City, Mo., Los Angeles, Menlo Park, Calif., Minneapolis, Portland, Ore., Rensselaer, N. Y., St. Louis.

FOOD

SEPTEMBER 1959

VOL. 31 NO. 9

30th YEAR

Trends & Forecasts 7
Schedule of Events 9
Hors d'Oeuvres 9
Developments to Watch .. 13
Who's Building What 17
Washington Report 21
Opinion 33
Men & Companies 103

GENERAL

Traveling FE Editor Witnesses Food Revolution in Europe 39
Reveals upsurges highly pertinent to US food makers . . . Pinpoints significant developments.

Food Executives Get Pay Raise 43
Annual check shows they rank fourth in size of management-salary boosts.

MARKETING

FE Industry Analysis: Interurbia—Brand Battle Salient* 46
Exploitation in these new markets seen strategic in countering private-label threat.

Home-Style Quality Rockets Small Firm Into Big-Time 48
There's still room for the little outfit to grow—as proved by this enterprising local baker.

Plant-to-Market Speedup 51
Transportable 5-ton reefer-containers win dollar-and-time savings for packer.

***Case History of Month:* Making Promotions Effective** 53

Marketing Signals 54

PACKAGING

Finds Cap Liner Faults Quickly* 59
Defective inserts inexpensively side-tracked by Best Foods' electric-arc tester.

Radical New Packaging Approach 60
Scheme of 'pivoting on purchasing department' keeps Armour ahead of rapid changes.

Gang-Packages Foods in Plastic—Fast 62
Striking new French unit molds, fills, seals containers at speeds to 16,000 an hour.

***Creating the Package:* Packer's Rx: Freezing Plus Film** 67

New Packages & Products 24

MANUFACTURING

How Central Graphic Panels Automate Bulk-Food Operations* 70
Four-station setup cuts costs, ousts human errors in beet-sugar process control.

Tips on Fine Grinding 74
Proper machines and know-how enable spice firm to speed job while insuring quality.

Canner Speeds Peeling 20% 77
Quality and yield up, too, as special skin-loosening unit is applied in tomato operation.

Practical Ideas 79

ENGINEERING & TECHNOLOGY

Cost-Squeeze Eased by Modernizing the Power Plant 84
How salt firm's new turbo-generator and higher steam pressure trim operating charges.

Technique for Improving Instants 86
Focus on foam-drying that delivers high-density, free-flowing, fast-reconstituting powders.

Better Livestock Profits Packers 89
Feeding advances, antibiotics, tranquilizers bring heavier, healthier animals and birds.

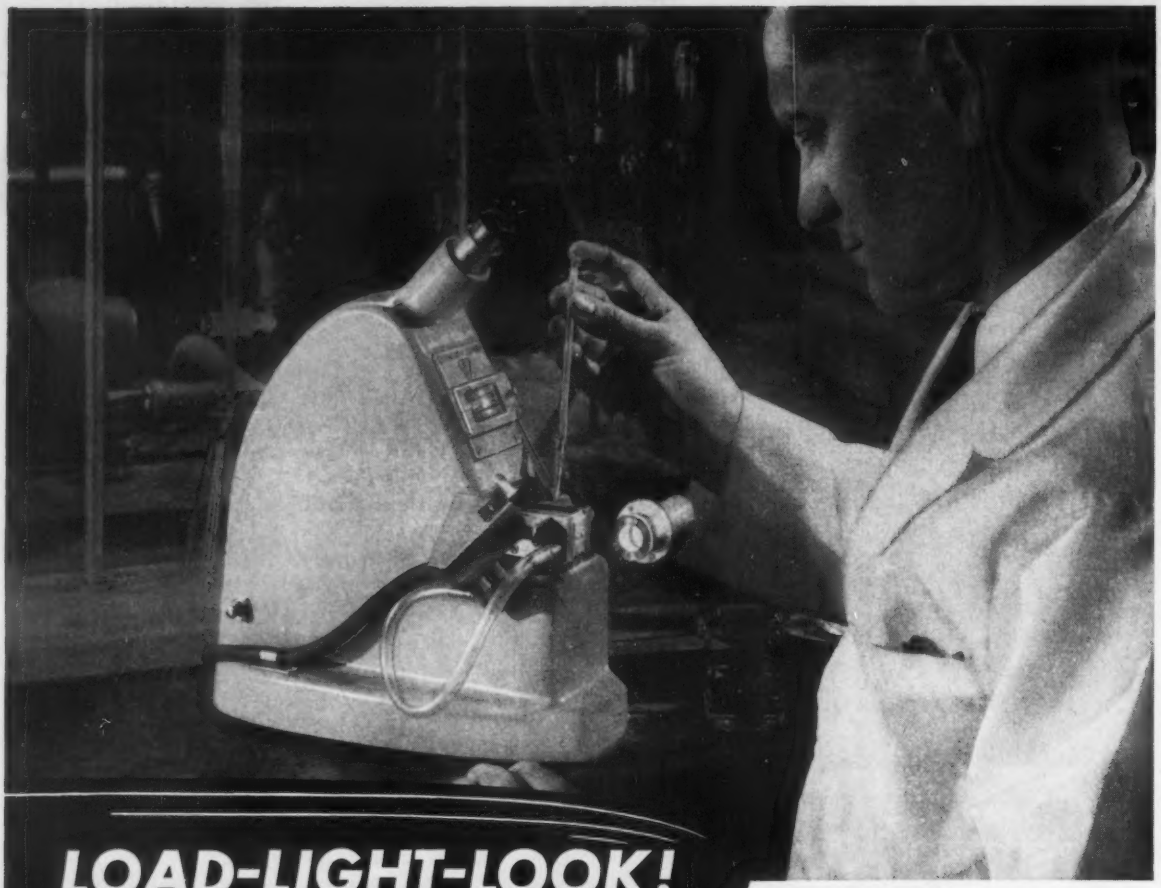
Advances in Technology 97

Service Center

New Equipment & Supplies 107
Just Off the Press 125
Useful New Books 130
Recent Inventions 133
Classified Advertising ... 135
Advertisers' Index 138
Advertisers' Literature and Reader Service . . Back of issue

*FREE REPRINT available. Write key number (at end of article) on Reader Service Card, back of issue.

ANNUAL EDITORIAL INDEX OF FOOD ENGINEERING's 1958 issues is available at 35¢ a copy. Order on Reader Service Card.



LOAD-LIGHT-LOOK!

You test fast with this lowest-cost Abbe!

B&L Abbe-3L Refractometer tests purity and concentration with top accuracy. Reads refractive index to .0005; estimates to .0001. Reads dissolved solids to .2%; estimates to .1%.

Fastest, easiest operation ever. Upfront horizontal prism loads or wipes in a wink. You can actually complete several tests a minute!

Lowest-cost Abbe. You pay only $745 for the Abbe-3L . . . less than 29¢ per working day for the first ten years of its long trouble-free life.

BAUSCH & LOMB
SINCE 1853

Here are a few of the many areas where B&L Abbe-3L Refractometers are standard test equipment:

Education Research Development

*

Organic Chemicals	Polymers
Solvents	Proteins
Glass	Waxes
Oil Contamination	Essential Oils
Hydraulic Fluids	Peroxide Solutions
Petroleum Derivatives	Coffee Solids
Plasticizers	Polyester Resins
Chlorinated Solvents	Paint Solvents
Silicones	Pharmaceuticals
Nylon	Biologicals
Cocoa and Chocolate	Flours
Salt Solutions	

BAUSCH & LOMB OPTICAL CO.
60345 St. Paul St., Rochester 2, N. Y.

☐ Send me Abbe-3L Catalog D-280.
☐ I'd like a demonstration.

Name .....
Title .....
Company .....
Address .....
.....

FOOD ENGINEERING

GRAHAME E. RIDDELL.....Publisher
FRANK K. LAWLER.....Editor
A. V. GEMMILL.....Senior Associate Editor
C. R. HAVIGHORST.....Senior Associate Editor, San Francisco
HERB POWELL.....Managing Editor
JOHN V. ZIEMBA..Associate Editor, Chicago
THAYER C. TAYLOR.....Associate Editor
EDWARD P. McGRATH.....Art Editor
VIRGINIA VAN ZANDT..Editorial Assistant
S. D. KIRKPATRICK.....Consulting Editor
R. S. McBRIDE.....Consulting Editor
G. B. BRYANT, JR.....Washington
JOHN R. WILHELM..Manager, News Bureau
DEXTER M. KEEZER...Economics Department
IVAN C. MILLER.....Circulation Manager

Domestic News Bureau; Atlanta, B. E. Barnes; Chicago, Stewart W. Ramsey; Cleveland, Arthur Zimmerman; Dallas, Marvin Reid; Detroit, Donald MacDonald; Los Angeles, Kemp Anderson; San Francisco, Jenness Keene; Seattle, Ray Bloomberg; Washington, D. C., George B. Bryant, Jr. Also correspondents in 56 major cities.

World News Bureaus: London, John Shinn; Paris, Robert E. Farrell; Moscow, Robert Gibson; Tokyo, Sol Sanders; Bonn, Morrie Helitzer; Beirut, O. M. Marashian; Mexico City, Peter Weaver; Caracas, John Pearson. Also correspondents in 68 major cities.

FOOD ENGINEERING (Formerly Food Industries)
September, 1959, Vol. 31, No. 9

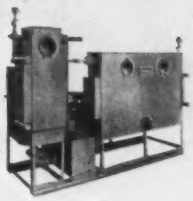
Published monthly by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder. **Executive, Editorial, Circulation and Advertising Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 N. Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change of address. Second class mail privileges authorized at Post Office, Albany, N. Y. Printed in U.S.A. Title registered in U.S. Patent Office. ©Copyright 1959 by McGraw-Hill Publishing Co., Inc., all rights reserved. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. Officers of Publications Division: Nelson L. Bond, President; Harry L. Waddell, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. B. Venezian, Vice President and Circulation Coordinator. Subscriptions are solicited only from men with management responsibility in manufacturing, marketing, packaging, engineering and technology in companies engaged in food manufacturing. **Position and company connection must be indicated on subscription orders. Send to address shown in box below.** Rates: U. S. possessions and Canada for individuals in field of publication, $2.00 per year, single copies $1.00; all other foreign $25.00 per year.

SUBSCRIBERS: Send subscription correspondence and change of address to Fulfillment Manager, Food Engineering, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify Fulfillment Manager promptly of any change of address, giving old as well as new address and **including postal zone**, if any (Official Post Office Request). If possible, enclose an address label from a recent issue of the magazine. Since copies are addressed one to two issues in advance please allow one month for change to become effective.

Postmaster: Please send form 3579 to Food Engineering, 330 W. 42nd St., New York 36, N. Y.

KATHABAR® SYSTEMS

Give these advantages to specifying engineers:



STERILE AIR

Now you can design spaces to maintain air sterility as scientifically as temperature and humidity. Only Kathabar enables you to deliver air at 5 micro-organisms per 10 cu. ft. or less, continuously.

PRECISE DESIGN

Reduce dew point of air from 72 F to 46 F with 85 F water!
No over-cool & re-heat costs. Kathabar lets refrigeration handle sensible cooling only (sensible, economical).
Deliver consistent gr./lb. and DB for process, storage, testing in sugar cooling...
instant coffee packaging...
processing of spices...
cellophane package lines.

GET FACTS

SURFACE COMBUSTION CORPORATION
2382 Dorr Street, Toledo 1, Ohio

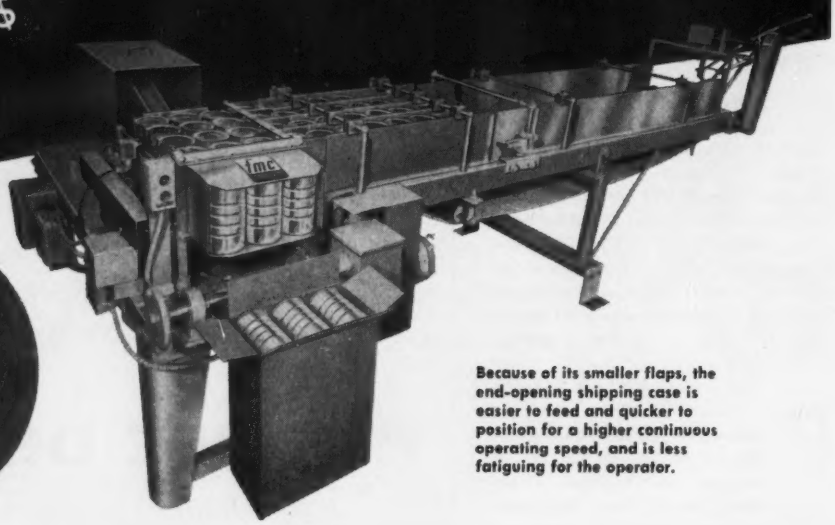
Surface

Send facts on Kathabar systems for following application:

.....
.....
name & title.....
company.....
street.....
city.....*zone*.....*state*.....

59-3F

Save WITH THIS COST CUTTING CAN CASER



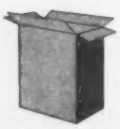
Because of its smaller flaps, the end-opening shipping case is easier to feed and quicker to position for a higher continuous operating speed, and is less fatiguing for the operator.

fmc

NON-SHOCK END-OPEN CASER

FOR SINGLE TIER LOADING

46 OZ. AND NO. 10 CANS



AND OTHER CAN SIZES

With end-opening shipping cases showing a savings of about 15% in fibre alone, no wonder packers using single tier patterns have welcomed FMC's development of this continuous, high speed, automatic caser. Employing many of the key design and construction features of the FMC Model 3 Caser for top-opening cases, this new machine easily handles 1200 cases per hour or more, limited only by the speed of the operator. Cans enter the machine upright, eliminating rolling can impact. As a result, there is no tearing of labels or scratching of lithography; no body dents or split seams. Although used largely for the more common can sizes cased in single tiers (46 oz. and No. 10 cans), the FMC Non-Shock End-Open Caser may also be built for single tier packs of smaller size cans. This machine is a truly remarkable achievement in the field of automatic casing equipment. Write today for complete information, or call your nearest FMC representative.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION ®

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
General Sales Offices:
WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

TRENDS & FORECASTS

SPECIAL FOOD SERVICE to EXECUTIVES

Personal income in first half of '59 ran 6% above corresponding period last year. Employment is close to pre-recession peak and average hourly pay rates are up considerably from '57 high.

Recent revisions of economic indicators have almost eradicated what was considered most severe postwar recession. Instead of dropping more than $3.5 billion between '57 and '58, gross national product was down only $800 million.

Food companies spent $92 million for new construction in first six months of this year, an increase of 81% over same period of '58. Number of new plants built is up 49% to 185.

Opportunities in Western Europe have prompted American food manufacturers to plan capital expenditures of $15.8 million for '60 in that area—up $2.6 million over '59 plans. Total foreign capital expenditures planned for next year are up 18% over '59 to $37.2 million.

Next to Europe, Canada is biggest attraction. Planned investment, there is $12.2 million for '59 and $14.4 million for '60. Figures for Latin America are $4.0 and $4.6 million. Data are from McGraw-Hill Department of Economics survey.

Commercial exports of manufactured food and beverage products are expected to increase 6% this year to $860.6 million, then go up 9% next year to $938.1 million. Sales of foreign subsidiaries are forecast 7% higher in '59, with 6% increase next year, a McGraw-Hill survey indicates.

Record sales of $13.2 billion, 8% over '57, were established in '58 by meat packers. Profits rose 4% to $82 million. Earning ratio dropped slightly from 0.7% to 0.6% of sales. Return on net worth was 5.5%, about same as in '57.

Extensive modernization programs under way in meat field for several years began to pay off in '58. Packers achieved gain in net profits by cutting operating expenses through higher efficiency.

Consumers got more meat for "money" in '58. At per-capita consumption of 152.1 lb., retail meat bill was 5% of disposable income. In '48, outlay was 6.1% for 145.5 lb. per capita.

Ice cream production for the first half of '59 was up 6% over same period of '58 to 337.7 million gal. Ice milk increased 3% to 52.3 million gal.; sherbet, 5% to 18.7 million gal.; Mellorine, 8% to 21.1 million gal.

Creamery butter dropped 5% in first half of this year to 749.2 million lb. American cheese production was off 2% to 529.4 million lb.

World production of cheese set a record of 2.9 million metric tons in '58, up 70% from pre-war, FAO reports. The US leads producing nations, followed by France, Italy, West Germany, and Netherlands in that order.

Record crop of 81 million turkeys is forecast for '59 by USDA.

One of five cups of coffee is made from instant, an increase of 100% over '53, according to Pan-American Coffee Bureau. Percentage by region ranges from 13% in West to 24% in East.

Fritos sales were up 15% for first 24 weeks of '59, totaling $26.4 million.

See Developments to Watch p. 13

One call, one shipment ...one complete bucket elevator

LINK-BELT makes all bucket elevator components ... all integrated to match perfectly, operate smoothly

There's no delay, no purchasing or installation problems when you call on Link-Belt for your bucket elevator. And when it's up, you can count on long-term elevating efficiency. Reason: Link-Belt makes *everything that goes into a bucket elevator* . . . from head to boot! By carefully designing, manufacturing and integrating all components, Link-Belt minimizes erection time and costs . . . avoids misalignment that causes inefficiency, bucket and casing wear.

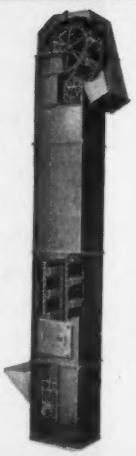
At your request, Link-Belt will gladly erect your elevator and accept full installation responsibility. For complete details, contact your nearest Link-Belt office.

LINK-BELT

BUCKET ELEVATORS

POSITIVE DISCHARGE bucket elevator is designed to handle light, friable or sluggish materials, and those tending to stick to the buckets.

Link-Belt's complete bucket elevator line includes 14 types in 4 basic designs . . . centrifugal, positive, continuous and internal discharge. Also a wide variety of buckets. . . steel, malleable iron, Promal or alloy metals. With this broad selection, Link-Belt can provide the proper elevator and components to meet any material and capacity requirement.



LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,253

Schedule of Events

September

17—Citrus Processing Conference, Citrus Bldg., Winter Haven, Fla.
20-25—Master Brewers Assn. of America, convention & exposition; Public Auditorium, Cleveland.
21-26—Maintenance Short Course; American Inst. of Baking, Chicago.
22-24—Inst. of Sanitation Management; Trade Show Bldg., N.Y.C.
23—Instrument Society of America, Food Industry Instrumentation Symposium & Workshop; Palmer House, Chicago.
24-25—American Soc. for Quality Control, Chemical Div. Conference; Shamrock Hilton Hotel, Houston, Tex.
25-27—National Poultry, Butter & Egg Assn., annual meeting and exhibit; Hotel Sherman, Chicago.
25-29—American Meat Inst., annual conference & exposition; Palmer House, Chicago.
28-30—Omerican Oil Chemists Society; Hotel Statler, Los Angeles.

October

5- 7—International Assn. of Ice Cream Mfrs., annual convention; Eden Roc Hotel, Miami Beach, Fla.
7- 9—Milk Industry Foundation, annual meeting; Hotel Fontainebleau, Miami Beach, Fla.
15-16—Quartermaster Assn., annual convention; Statler-Hilton Hotel, N.Y.C.
15-17—National Pretzel Bakers Inst., annual meeting; Shelburne Hotel, Atlantic City, N. J.

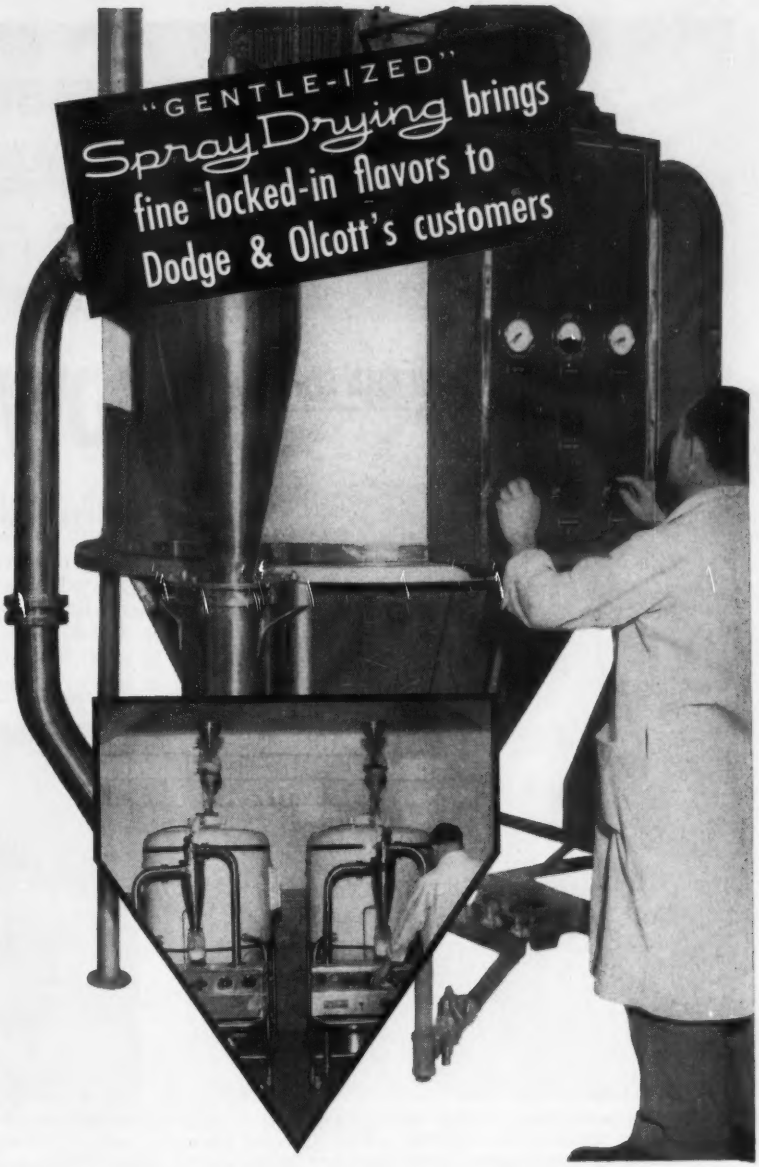
HORS D'OEUVRES

▶ Activity Analysis is a new management function at General Mills. A committee spotlights deviations from acceptable performance standards and reports to the Executive Council. Result: Activity Catalysis.

▶ "Surest way to overspend on advertising is not to spend enough to do a job properly," says General Food's President Mortimer. So if you must pinch, do it where it doesn't hurt so much.

▶ Atlanta's soda king, Willis Venable, spent $46 to advertise Coca-Cola in 1886. He sold 25 gal. that first year, for $50. But Venable didn't pause with the refreshment, and next year he sold 1,000 gal.

▶ Da Vinci's painting of the Last Supper depicts a salt cellar spilled before Judas, who later betrayed Christ for 30 pieces of silver. If you spill salt, throw the proverbial pinch over your shoulder to protect your friends against you.



With the installation of Nerco-Niro spray dryers, Dodge & Olcott has extended its line of quality flavor bases. Liquid solutions are now being processed through spray dryers where instantaneous and "Gentle-ized" evaporation produces a flavor powder with exceptional shelf life, free flow, and superb taste perfection. The unique design and positive control of air, temperature, and droplet size in the dryer means top quality and constant uniformity in food flavors being processed by this company.

The Nerco-Niro engineering staff is available for consultation concerning your specific problem whether it be research, testing, engineering, or custom drying.

Nerco-Niro Spray Dryer Div.

NICHOLS

NERCO NIRO

ENGINEERING & RESEARCH CORPORATION
70 Pine St., New York 5, N. Y.
San Francisco Indianapolis
Montreal

CLUPAK EXTENSIBLE KRAFT PAPER

ORDINARY KRAFT PAPER

DISCOVERY OPENS NEW ERA FOR PAPER

NOW, PAPER THAT.

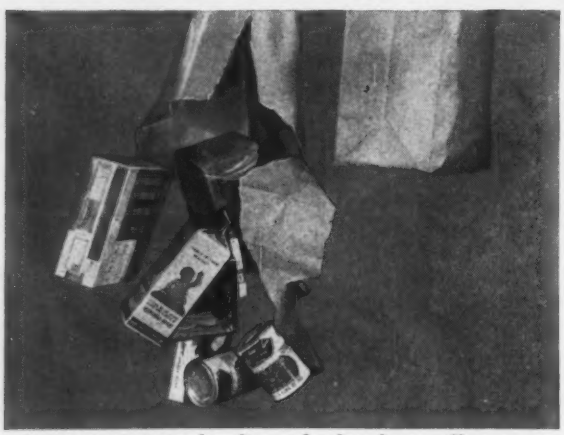
DROPPED CAN crashes through ordinary paper which lacks stretch, but bounces off CLUPAK paper of equal basis weight. Unlike creped paper which stretches easily, every fiber of CLUPAK paper resists as it stretches.

NEW TOUGHNESS, FLEXIBILITY CUTS PACKAGING COSTS, INSPIRES NEW PRODUCTS.

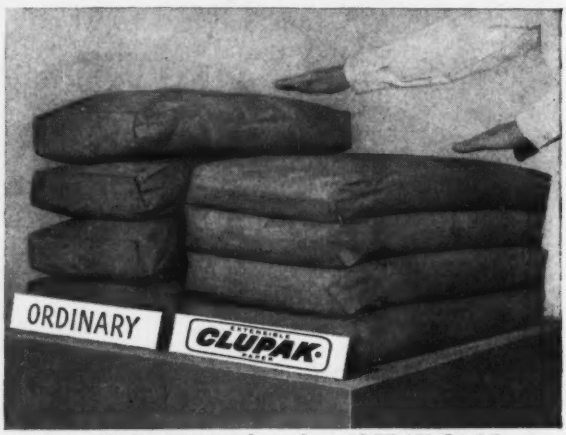
Until the invention of CLUPAK Extensible Paper, paper has just been strong. It resisted the energy of impact until it ripped or tore. But now paper can also be *tough.* CLUPAK paper has a built-in stretch that lets it absorb energy that otherwise would cause it to break.

Because CLUPAK can be almost any type or basis weight

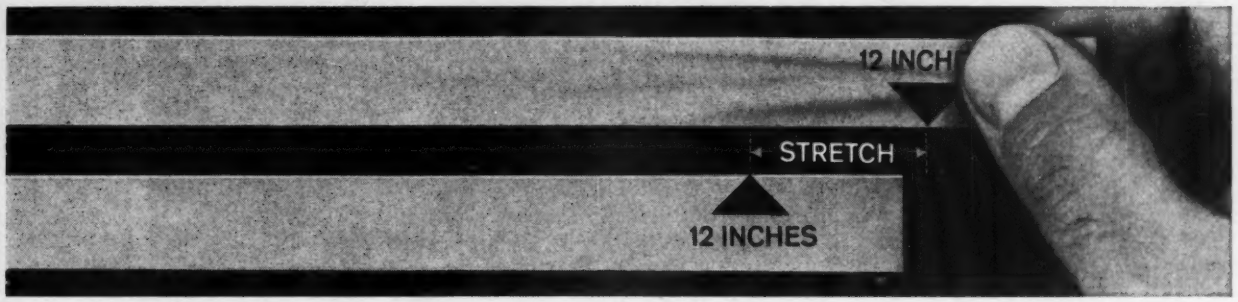
MULTIWALL SACKS perform strikingly better when made with CLUPAK paper. Bottom sacks here carry 6,000 pound weight without failing, resist roughest handling. Basis weight can often be reduced substantially, cutting sack cost.



GROCERY BAG of ordinary kraft splits, spills contents after drop, but the much tougher CLUPAK paper bag absorbs shock, remains intact.



STACK COMPARISON shows how CLUPAK flexibility enables multiwall sacks to fill better, for many products, saving up to 25% of space needed for storage and shipping.



STRETCHES

of paper, with varying controllable degrees of stretch, it transforms conventional paper into virtually a new material—one with almost unlimited possibilities.

CLUPAK stretch is already giving multiwall sacks, grocery bags, magazine wrappers, paper-base pipe and laminates, shipping containers and many other products spectacularly better performance and lower costs. And the flexibility of CLUPAK papers can also mean startling savings and advantages in many uses and situations.

But these applications of CLUPAK Extensible Paper are only the beginning. CLUPAK is the most exciting new word in paper. The "give" it adds to paper opens a new era, invites a thousand new products and design improvements. We suggest you investigate the potential of CLUPAK for your business. It will pay you to consult your paper supplier. Our licensees, who make CLUPAK paper, are listed below. ***Clupak, Inc., 530 Fifth Avenue, New York 36, N. Y.***

UNIQUE TEST machine measures and graphs far greater toughness of CLUPAK paper. Printability, surface friction, porosity and other properties of CLUPAK paper can be controlled as with conventional paper.

KEY FACTS FOR BUYERS

1. CLUPAK kraft is the same as ordinary kraft except that it is stronger, tougher and more flexible. Its built-in stretch accommodates strains that break ordinary kraft.
2. This increased toughness, for example, allows multiwall sack users to increase strength yet decrease the number of plies with resulting economies.
3. CLUPAK, INC. conducts research and development activities and advises licensees on technical matters.
4. CLUPAK, INC. permits the use of its trademark only on paper which meets this company's rigid toughness requirements.

TRADEMARK "CLUPAK" is your assurance that paper will deliver remarkable CLUPAK benefits. Look for it, expect it.

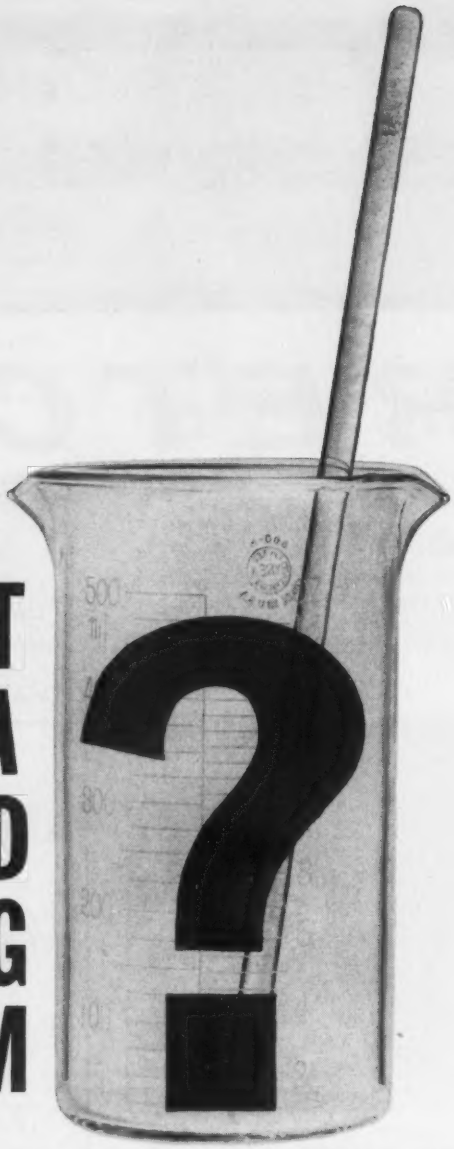
BE SURE TO LOOK FOR THIS TRADEMARK

EXTENSIBLE **CLUPAK®** PAPER *

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

You can now get CLUPAK paper and products made with CLUPAK paper from

ALBEMARLE PAPER MANUFACTURING CO.
CALCASIEU PAPER CO.
CANADA PAPER CO. *(Canada)*
CROWN ZELLERBACH CORP.
CONTINENTAL CAN COMPANY, INC.
DYNÄS AKTIEBOLAG *(Sweden)*
HUDSON PULP AND PAPER CORP.
INTERNATIONAL PAPER CO.
ST. LAWRENCE CORP., LTD. *(Canada)*
ST. REGIS PAPER CO.
UNION BAG-CAMP PAPER CORP.
WEST VIRGINIA PULP AND PAPER CO.



GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

Sunkist Growers

Exchange

PRODUCTS SALES DEPARTMENT • ONTARIO, CALIF.

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

DE[illegible]ENTS TO WATCH

FOOD

Minute Maid will install impact-extrusion aluminum can-making equipment for test run of lightweight container for orange juice.

Using dry-freeze process, General Foods has developed line of 17 baby foods in form of frozen crystals packaged in laminated pouches.

Free-Flowing and humidity-resistant starch, developed by Staley for pneumatic dusting in bakeries, is protein-free, doesn't support insects.

Measurement of backfat on live hogs by ultrasonic device is more accurate than estimates by experienced grader, but slower, USDA finds.

Frozen Food Handling Code is reported to be basis of new regulations being drawn up by Connecticut for enforcement in October. AFDOUS code requires maintenance of proper temperatures in distribution channels.

Addition of phosphates to bread and sugar reduced tooth decay 50% in experiments conducted with school children in Sweden. And in MIT tests with hamsters, significant results also were obtained.

Russia has developed wheat which grows as bush, with 60 to 75 stems and spikes of 100 to 200 grains per stem. Yield of 140 tons per acre claimed.

Blistering of potato chips can be controlled by heating raw potato slices in water or weak solution of calcium salt at 130 to 150F. for 4 or 5 min. before frying, USDA researchers have discovered.

Thornton Canning plans to market tomatoes in dehydrated, crystalline form. Firm is experimenting with vegetable flakes for institutional use. Thornton recently was bought by Calif. Canners & Growers.

New 7-fold apple juice concentrate has been rated significantly better than two single-strength commercial juices, USDA reports. Test involved 198 households in Pittsburgh. Flavor essences are added back to concentrate.

First domestic Coca-Cola in cans is being test marketed in New England.

A&P has introduced private-label condensed soups in 10½ and 22-oz. cans. Smaller size sells at 3 for 32¢. Soup is packed for retailer.

Encapsulated corn oil, margarine, and chocolate for feeding space men have been developed by Southwest Research Institute. With nutritious shell and high filler-to-shell ratio, "food pills" have promise.

New low-cost electrochemical switch consists of three electrodes in electrolyte. Small third electrode turns current on and off between two main electrodes. Operates without wear, can be designed for any current.

Movement of sugar cane from field to factory in pipelines is being tested by Hawaiian sugar company. Chopped in small pieces, cane is pumped through pipe in water. Aim is to use 14-in. portable pipes.

Better-shaped hams, elimination of air discoloration, and improved fill-in weight are benefits claimed for vacuum ham press developed by American Can. Pressing under vacuum takes air from meat.

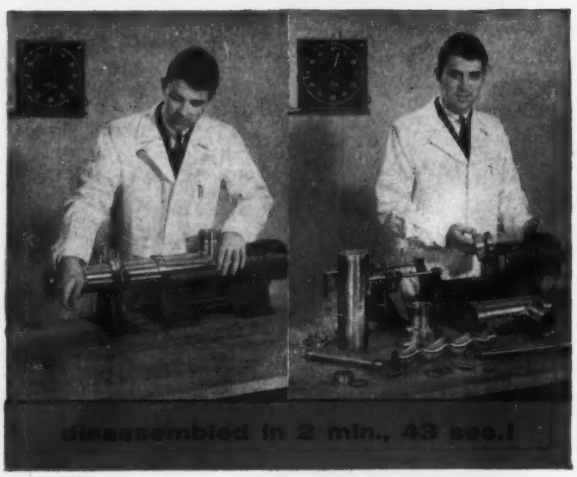
MOYNO®
FOOD PUMPS

MOYNO®... *the "Quick-to-clean"* Food Pump that even *Pumps Suspended Solids!*

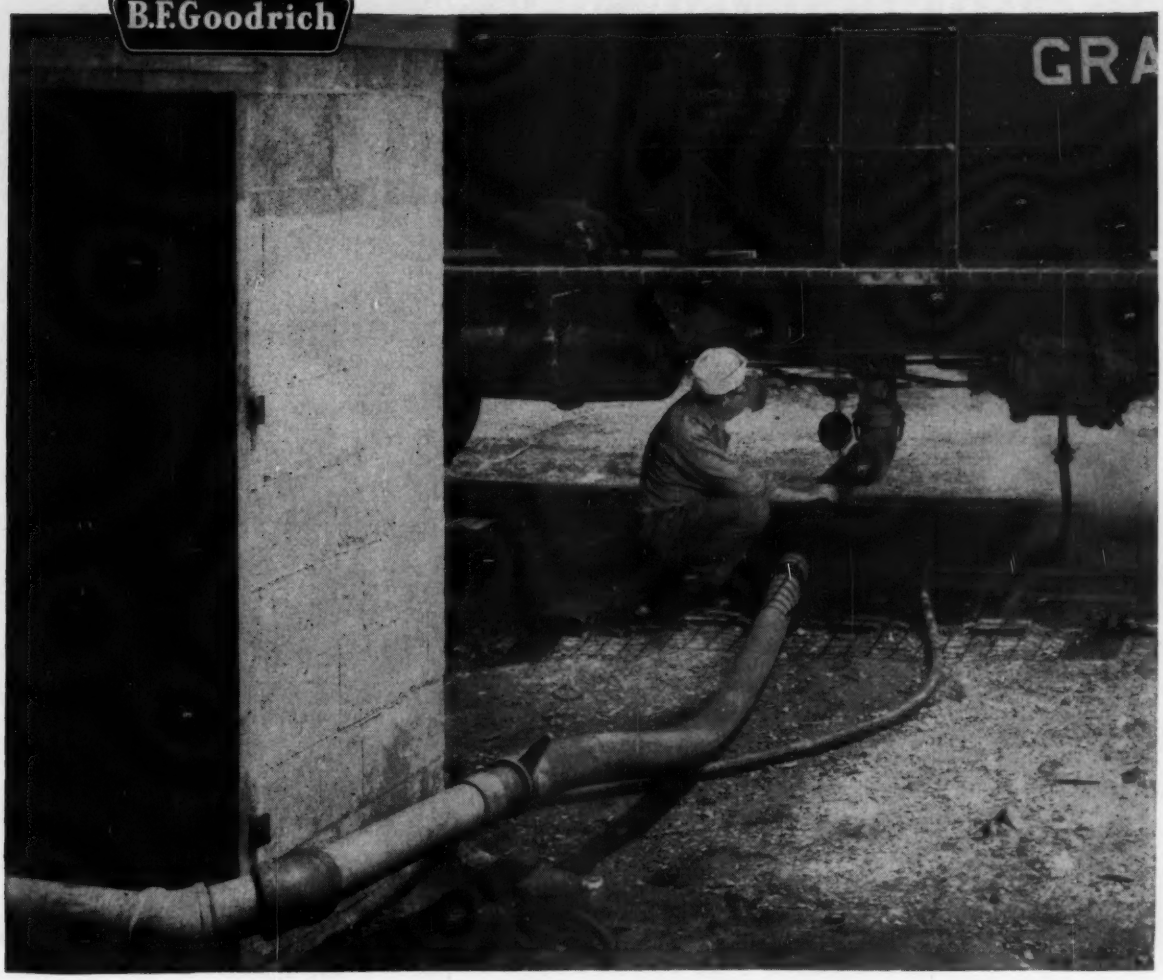
A MOYNO Food Pump can easily be disassembled in 2 minutes and 43 seconds for thorough, effective cleaning and be back on duty in minutes. MOYNOS eliminate long, costly cleanups that rob production time. Foods stay pure too, because MOYNO'S smooth internal contours won't collect particles where bacteria might thrive, and bearing lubricant is completely isolated from pumping compartment to prevent contamination.

Any food product that will move through a pipe—from cider to lumpy potato salad—can be pumped with a MOYNO. The *"progressing cavity"* principle that distinguishes MOYNO from all other pumps explains this remarkable capability. The cutaway model above shows the screw-like, reversible rotor that revolves in a double-threaded stator to create these progressing cavities. Material flows smoothly and uniformly, without pulsation, aeration, agitation or disintegration. All wettable parts are stainless steel—or stator may also be synthetic rubber, odorless bakelite or other material, depending on service requirements. If needed, off-the-shelf replacement parts are always immediately available.

To chop cleaning costs and keep *all* foods moving through your plant, learn more about MOYNO by writing today for Bulletin 34 FE



ROBBINS & MYERS, INC.
motors, household fans, Propellair industrial fans, hoists, Moyno industrial pumps
SPRINGFIELD, OHIO • BRANTFORD, ONTARIO



Pass the syrup— a carload at a time

B.F.Goodrich improvements in rubber brought extra savings

WORKERS at this candy company were having a terrible time unloading corn syrup through metal pipe. Getting the tank car in just the right spot to make the hook-up took a lot of time. The rigid pipe was heavy, hard to maneuver, a strain to connect.

Company engineers knew that rubber hose would be easier to handle, but would rubber change the taste of the syrup? They took the problem to a B.F.Goodrich distributor, and a special hose was developed.

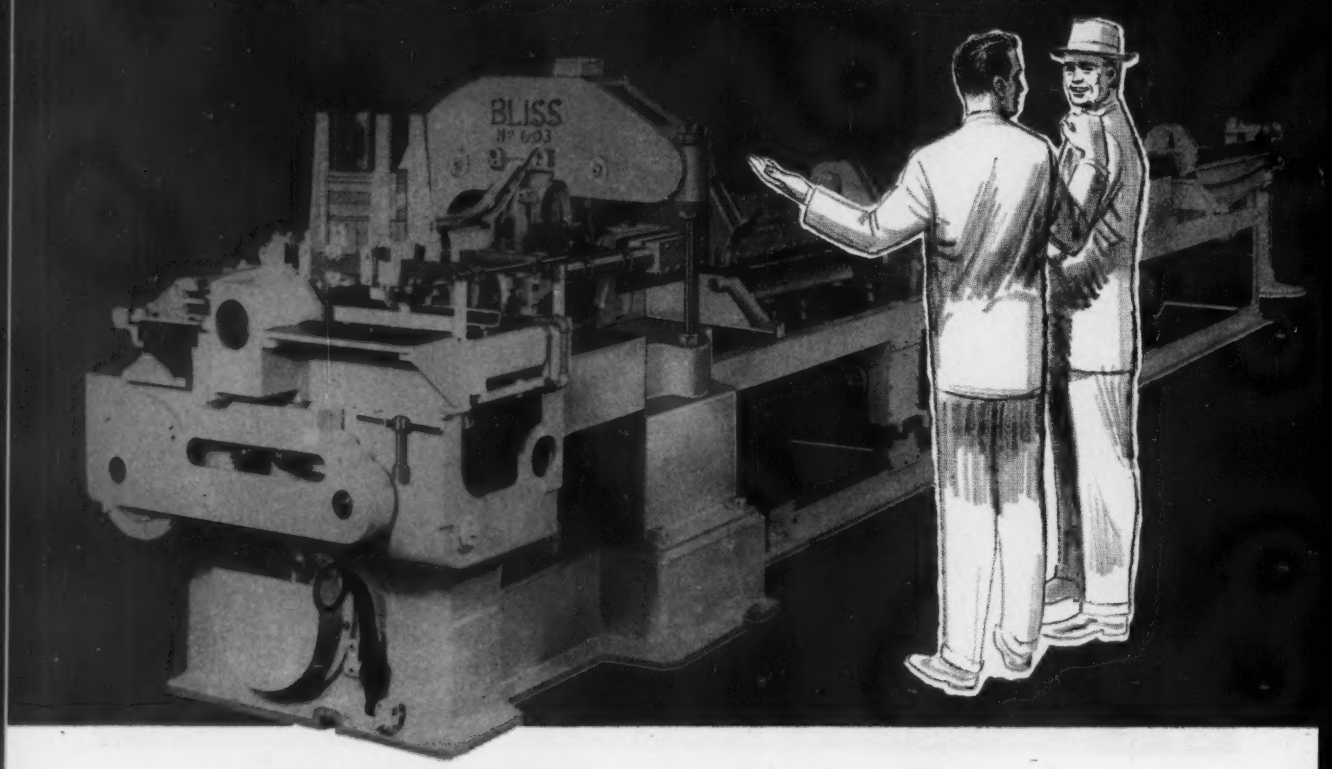
The rubber B.F.Goodrich used for the lining has no odor, doesn't affect the taste of the syrup. The cover is extra tough, can be dragged over rough ground, can stand all sorts of weather.

The B.F.Goodrich hose has been on the job two years now, is expected to last five more. Because it's so much more flexible than pipe, it can be connected in a hurry. No need to jockey tank cars back and forth. It's faster to hook up, too, because special handles are built into the couplings, eliminating the need for wrenches.

Your B.F.Goodrich distributor has complete information on the B.F. Goodrich hose described here. And, as a factory-trained specialist in rubber products, he can answer your questions about the many products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-679, Akron 18, O.*

B.F.Goodrich ***industrial rubber products***

ANNOUNCING the BLISS 603 BODYMAKER



It makes a range of sizes that previously required 2 or 3 machines

Whatever size or sizes of can you use, chances are it can be made on Bliss' new No. 603 "Universal" bodymaker, the most versatile bodymaker yet designed.

The Model 603 Bodymaker manufactures cans up to 6 3-16" diameter and 5 9-16" high. With modifications in the feed bar stroke and work station housings involving standard change parts, it will produce cans up to 7 13-16" in height.

No other bodymaker made can handle that range of sizes; one plant wanting to make all those sizes would have to have either 2 or 3 bodymakers to do the job.

It has been designed for continuous high speed operation at maximum production rates of 400-500 can bodies a minute on smaller size cans. Open arch construction, with one side open, provides access to forming parts for adjustment and quick changeover to a different size can.

Why not take a long thoughtful look at the new 603 and other related equipment in the Bliss high speed can line? We'll be glad to give you all the information you want—both on the products and on the economics of making your own cans. Drop us a line today or call your local representative.

BLISS
SINCE 1857

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name—it's a guarantee

PRESSES • ROLLING MILLS • ROLLS • DIE SETS • CONTAINER MACHINERY • CONTRACT MFG.

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $28,210,500 for expansion.

Proposed Work

Armour & Co., Houston, Tex., meat processing and packing plant to cost $2,000,000.

Aroostock County Potato Products Co., Houlton, Me., $500,000 plant.

Borck & Stevens, Bridgeport, Conn., bakery. Cost: $110,000.

Bowman Biscuit Co., Denver, $5,000,000 plant.

Continental Baking Co., Golden Valley, Minn., plast to cost $1,250,000.

Foremost Dairies, Montgomery, Ala., milk processing plant. Cost, $1,000,000; Houston, Tex., milk and products plant to cost $3,000,000.

Fraser Valley Milk Producer's Assn., Burnaby, B. C., receiving, processing, and milk distribution facilities on 25-acre site. Cost: $3,500,000.

General Baking Co., Philadelphia, $1,000,000 plant expansion.

Gooch Packing Co., Abilene, Tex., meat packing plant expansion. Cost: $150,000.

Lone Star Fish By-Products, Sabine Pass, Tex., fish processing plant to cost $110,000.

New York Bakery, San Antonio, Tex., $250,000 bakery.

Ontario Turkey Growers, Ingersoll Ont., $100,000 plant to process turkeys.

Orange Crush Ltd., Montreal, Que., $500,000 warehouse and office.

Contracts Awarded

Arnold Bakeries, Bedford Hills, N. Y., bakery to cost $2,000,000.

Blue Star Foods, Rockford, Ill., $300,000 food processing plant.

Borden Co., Fort Wayne, Ind., 1-story ice cream plant. Cost: $750,000.

Campbell Soup Co., Listowel, Ont., food processing plant, office and laboratory. Cost: $450,000.

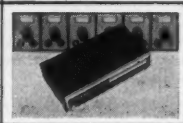
Elm Tree Bakery Co., Appleton, Wis., warehouse, bakery, garage additions. Cost: $300,000.

NEW LOW COST AUTOMATIC BATCHING
WITH INSTANT FORMULA CHANGING

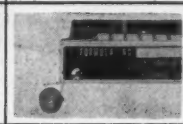
HOWE BATCHPLUG

1 Quickly and easily adjusted to accurate settings.

2 Each standard Batchplug controls up to 10 ingredients, 3 scales.



3 Sealed for privacy—no dials to reset—no operator error.



4 Inserting Batchplug changes entire plant to new formula instantly.

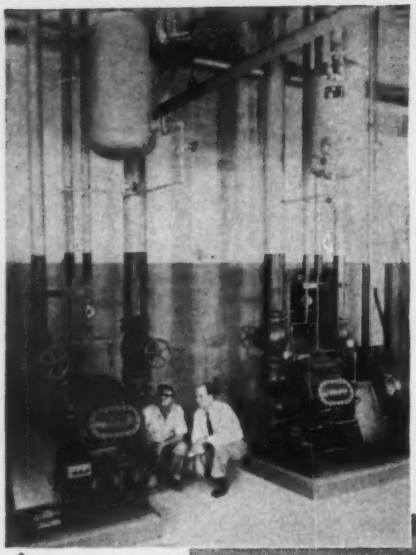
The Howe BATCHPLUG* cuts panel and circuit costs—puts automatic batching in everybody's reach! Simple, rugged, easily set for any formula up to 10 ingredients. An exclusive Howe development! *Pat. Pending.

HOWE

THE HOWE SCALE CO. • RUTLAND, VT.

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

WRITE TODAY FOR OFFICE DEMONSTRATION OR NEW BATCHPLUG FOLDER



View of the two, 8-cylinder, Vilter VMC ammonia compressors installed in the Pepsi-Cola Bottling Company's new Cincinnati plant. On the right is Mr. Albert M. Olsen, Chief Engineer.

Be Bright! Be Light!
Have a Pepsi!

PEPSI-COLA®

BE RIGHT! BUY RIGHT!
BUY VILTER!

This new Pepsi-Cola Bottling Company plant houses three high-speed bottling lines capable of producing over 7,000,000 cases of Pepsi-Cola yearly.

"You can relax with Pepsi and with Vilter refrigeration,"

says Albert M. Olsen,

Chief Engineer of Pepsi-Cola's new Cincinnati plant.

No trouble, no down-time . . . just dependable day-in-day-out refrigeration —that's the Vilter story at Pepsi-Cola's modern new plant in Cincinnati. With Vilter compressors requiring little or no attention, a spotless plant is maintained—an exciting, sparkling show place for thousands of visitors.

The Vilter installation includes two 8-cylinder VMC ammonia compressors each producing 116 tons of refrigeration at 40° F. suction and 175° F. discharge. Three-step capacity control is provided—25%, 50%, 75%—for economical, efficient operation. These compressors provide refrigeration for two Carbo-Coolers where the water and syrup mixture is cooled and carbonated before being piped to the bottling line. The Carbo-Coolers run sixteen hours per day and cool 2981 gallons of mixture per hour to a temperature of 35° F. This demanding production schedule calls for reliable refrigeration.

The dependable performance of Vilter VMC compressors is the result of tireless engineering improvements: protection against refrigerant slugs, built-in capacity reduction; precision manufacturing techniques; painstaking inspection; careful assembly; and factory-run-in tests.

Why not call on your nearest Vilter Distributor for help with your refrigeration problem.

Sold and installed by Vilter Distributor, C. P. Wood & Co., Cincinnati, Ohio.

Write for helpful bulletin to The Vilter Manufacturing Company
Dept. E-812, 2217 South First Street
Milwaukee 7, Wisconsin

Bulletin 817
VILTER VMC
Ammonia Compressor

Vilter®

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin
Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

18 CIRCLE 18 ON READER SERVICE CARD

William A. Garlocker, St. George, Utah, $290,000 turkey processing plant.

General Foods Corp., Dedham, Mass., $1,000,000 warehouse and distribution center.

H. P. Hood & Sons, Agawam, Mass., $140,000 milk processing plant.

Jack's Cookie Co., Greenville, S. C., $115,000 warehouse.

Merchant's Co., Hattiesburg, Miss., $388,000 1-story poultry processing plant.

Olympia Brewing Co., Tumwater, Wash., brewery addition to cost $1,880,000.

Rich Plan of Houston, Houston, Tex., $112,500 food processing plant.

Sara Lee (Div. of Consolidated Foods Corp.), Chicago, $200,000 bakery addition.

Joseph Schlitz Brewing Co., Milwaukee, Wis., $150,000 bottlehouse addition.

Stop & Shop, Dedham, Mass., dairy plant to cost $225,000.

S. B. Thomas Co., Fairfield, Conn., 1-story bakery distribution center. Cost: $115,000.

Ward Baking Co., Medford, Mass., $115,000 distributing center.

Others

Aeropak Inc., is expanding its aerosol packaging capacity with new facilities at Kearney, N. J.

Bercut Richards Packing Co. has completed a new 118,000 sq. ft. warehouse at its processing center in Sacramento, Calif.

Campbell Soup Co. has just completed a major expansion of its Pacific Mushroom Farm at Gazos Creek, Calif. A new growing house will boost production 20%.

J. A. Folger & Co. has selected New Orleans as the site for its new coffee roasting plant. Built on a 20-acre site, the plant is to be completed by the middle of next year.

General Foods will build three new combination sales-distribution centers to serve the Chicago, Cincinnati, and New England areas.

Industrias Quimicas de Mexico will construct a citric acid plant in Mexico.

Olympia Brewing Co. will spend an additional $1,100,000 for buildings and equipment this year as part of its expansion program.

Western Meat Inc., Edina, Minn., $110,000 meat processing plant.

CIRCLE 19 ON READER SERVICE CARD→

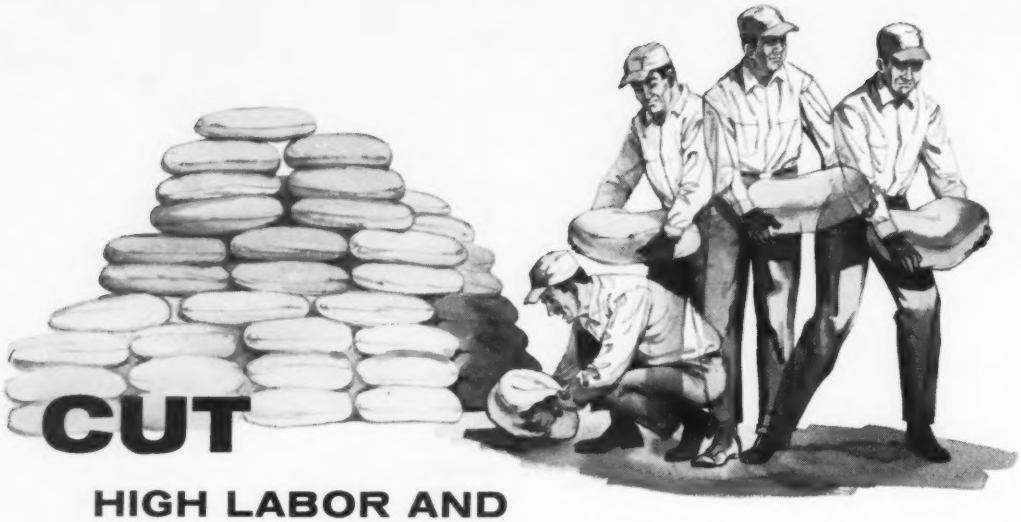
NEW LIFT... LONGER LIFE FOR YOUR PRODUCTS WITH FIRMENICH POWDERED FLAVORS

New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

FIRMENICH INCORPORATED

FIRMENICH & CIE
SUCCESSEURS DE
CHUIT, NAEF & CIE
GENEVE SUISSE

250 WEST 18TH STREET, NEW YORK 11
FIRMENICH OF CANADA, LIMITED,
348 WALLACE AVENUE, TORONTO
CHICAGO OFFICE: 612 NORTH MICHIGAN AVENUE
LOS ANGELES, 1756 MALCOLM AVENUE
GENEVA PARIS LONDON



CUT

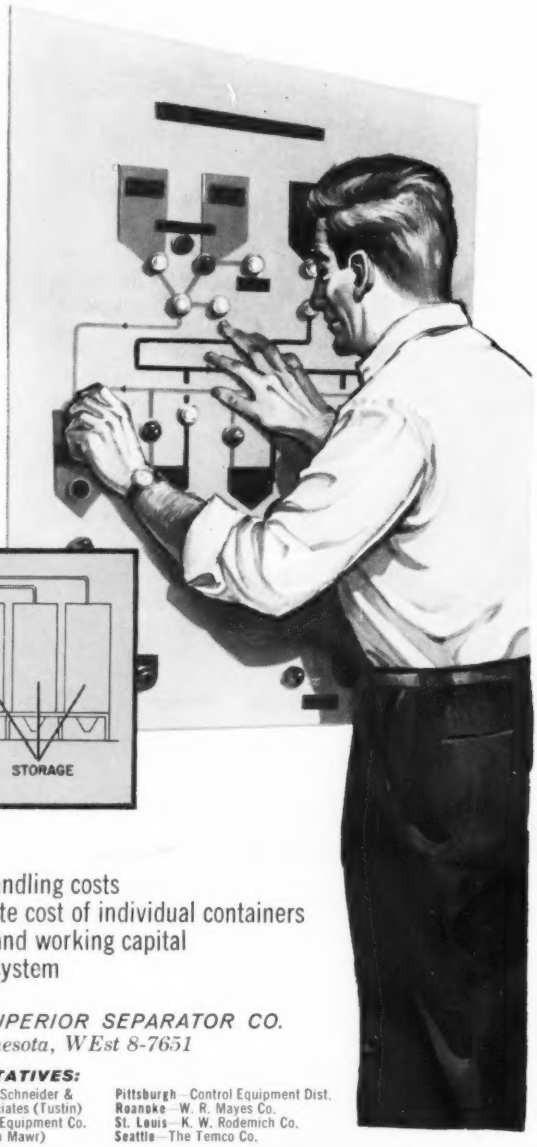
HIGH LABOR AND CONTAINER COSTS

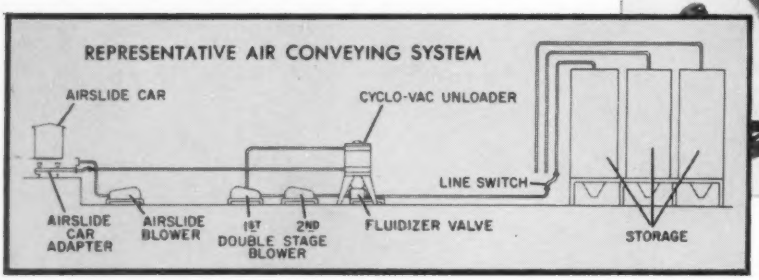
...with a

FLUIDIZER

Air Conveying System

AVERAGE SAVINGS RANGE
FROM $3.60 TO $6.10
PER TON OF MATERIAL





Most Advanced in Modern Air Handling

Fluidizer®

BENEFITS:

- Significantly lower handling costs
- Buy in bulk—eliminate cost of individual containers
- Free valuable space and working capital
- Completely sanitary system

THE FLUIDIZER COMPANY, *A DIVISION OF SUPERIOR SEPARATOR CO.*
121 South Washington Avenue, Hopkins, Minnesota, WEst 8-7651

OFFICES:

Minneapolis—Main Plant, Hopkins, Minn.
Chicago—Regional Office
Akron—M. Momchilovich Co.
Baltimore—Robert Case
Houston—Cook Baking Service

REPRESENTATIVES:

Los Angeles—R. E. Schneider & Associates (Tustin)
Philadelphia—Joos Equipment Co. (Bryn Mawr)
Pittsburgh—Control Equipment Dist.
Roanoke—W. R. Mayes Co.
St. Louis—K. W. Rodemich Co.
Seattle—The Temco Co.

Capitol's Slim Record: Color Action

Congress, rushing to adjourn as this page was shaped up, has acted positively this year in only one key food area—color additives.

Early in the session, it extended for two years permission to color oranges with Citrus Red No. 2.

Currently, the new general color additives bill (S-2197) has been hurried out of committee by the Senate. But the House isn't inclined to such speed, though industry pressure may yet spark the needed push.

Favored with general support, S-2197 would allow FDA to set color tolerances as it does those for food-additives. And it requires makers to submit proof of a color's safety.

Industry won two amendments: (1) Any substance deemed safe under the Food Additives Amendment is also considered safe as a color, and (2) FDA can waive the requirement that industry spell out methods for determining safety, if no public threat is involved.

Disappointing to many makers, however, is the bill's lack of a 'grandfather' clause blanketly exempting old-line substances from safety checking.

Recap of Measures That Missed

Failing to get active consideration were a number of specialized food measures. These sought—

► **Restriction of imports of citrus fruits, walnuts, and dates . . . Marketing standards for imported foods . . . Regulation of interstate transport of lobsters . . . Tighter restrictions against import of polluted shellfish.**

Also "dead letters", as far as this session was concerned, were several headline-level bills significant to food men. These had aimed for—

► **An easing of the Government's mounting grain surpluses . . . A $1.25 minimum wage . . . Price-discrimination bans . . . Pre-notification of price hikes . . . Pre-notification of mergers . . . National 'fair trading' of brand items . . . Doubled funds to fight water pollution.**

As for state taxing of sales of out-of-state firms, the session swung a bill to ease the bite. But the last word wasn't in on this continuing problem.

Artillery was also ranged against the co-ops as they moved for confirmation of their "right to own and operate processing and marketing facilities."

PHS & FDA Target Ray Hazards

An increased role for Public Health Service and FDA in protecting the public against radiation hazards is finally in store.

The President's newly-created Federal Radiation Council, composed of three Cabinet members plus the Atomic Energy Commission chairman, will set maximum standards of exposure from all sources, including food, environment, and nuclear activities.

Until now, the permissible-limit yardsticks have left a lot to be desired. In the public view, the demarcations, stemming generally from evaluations of independent groups, have tended to lack clarity and authority.

Ike will ask Congress for increased funds for radiation research by PHS and FDA. And progress on standards is looked for with their growing grasp of the subject.

No early let-up is seen, however, in the needling by Congressional critics who claim the public has been inadequately protected. Senator Humphrey, for one, has attacked the new setup as giving a scientific job to political appointees.

Meanwhile, FDA reported that latest sampling showed milk (also hay and ensilage) well within "radioactivity levels regarded as safe by present standards."

'Caution' Labels for Pressure Cans?

FDA Commissioner Larrick now seeks a special labeling law to cover hazardous household products—specifically including pressurized food containers.

His concern is that exposure of pressurized cans to heat invites explosion, hence he calls for "Warning" or "Caution" labels.

Following Mr. Larrick's proposal, made before the Senate Commerce Committee, a representative of Reddi-Wip held that any such regulation should come under the Food, Drug & Cosmetic Act.

The proposed legislation would replace the old Federal Caustic Poisons Act of 1927, which fails to cover many new products. But due to technicalities and imminent adjournment, no action is expected before the next session of Congress.

Tax Reform Bears on Food Business

The food industry may find important implications in those tax-reform hearings slated this Fall.

First month of hearings before the House Ways & Means Committee will encompass testimony by industry and labor representatives and independent experts.

Among tax factors to be weighed are: Depreciation, accounting provisions, treatment of capital gains, expense accounts, business deductions, employee benefit plans, partnerships, and estates.

Chairman Wilbur Mills talks in terms of two years of hearings. But in the coming '60 election year, politicians may mount a push for earlier tax cuts—and here the findings of the study would have direct bearing.

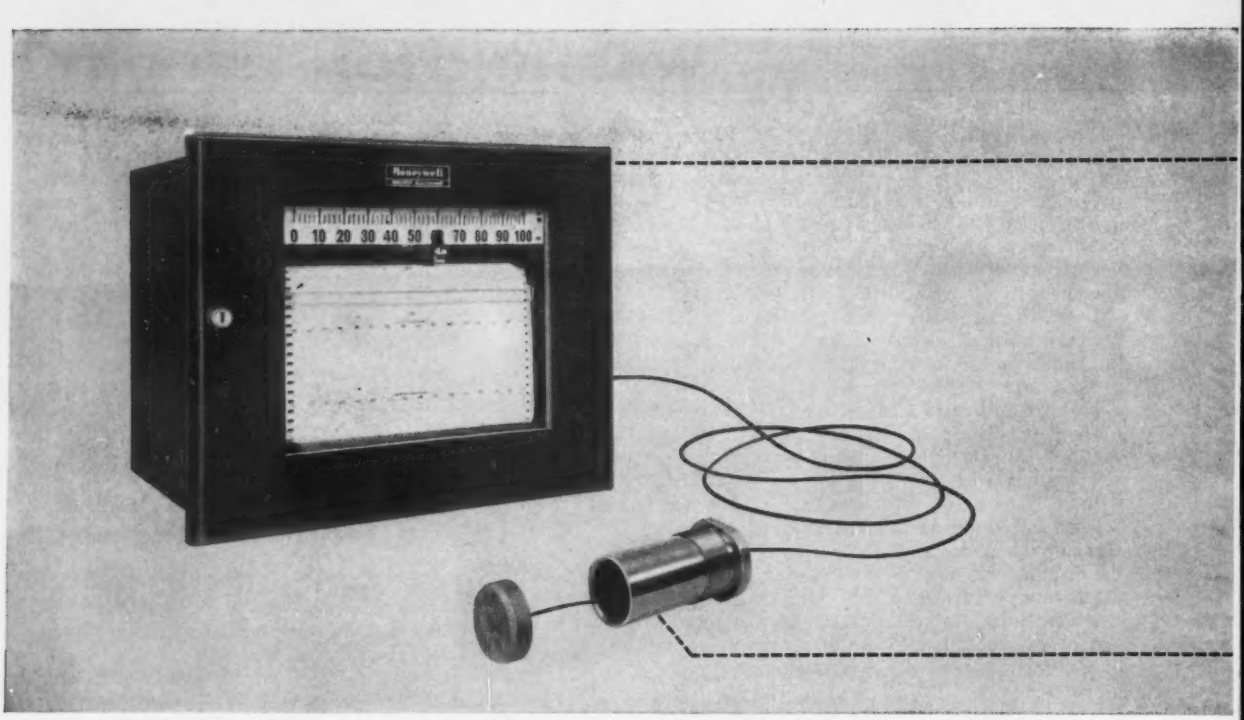
BRIEFS

Humane Slaughter Act has been amended to permit "CO_2-ing" of calves. Initially, this pre-kill anesthetizing technique was approved only for swine and sheep.

Does lactose need clearance under the Food Additives Amendment? FDA now confirms that it doesn't—thus clarifying the point for dairy interests.

That proposed peanut butter standard (FE Aug., p. 21) is much too restrictive, say some makers. FDA has ranged a 95%-peanut-derived product. One firm favors trimming to 92%. Another thinks 87% sufficient.

Retail-chain buying and pricing will now get FTC's particular attention. This is sharper phasing of Commission's probe following basic check on economic concentration.

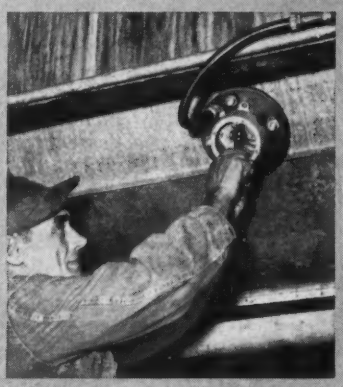


End-point control

Install the AMIF end-point control system in one day

After holes are cut in renderer walls, sleeve is welded into place . . .

. . . the sensing element is then screwed into the threaded sleeve, and . . .



. . . leads from the sensing element are connected to the *ElectroniK* recorder.

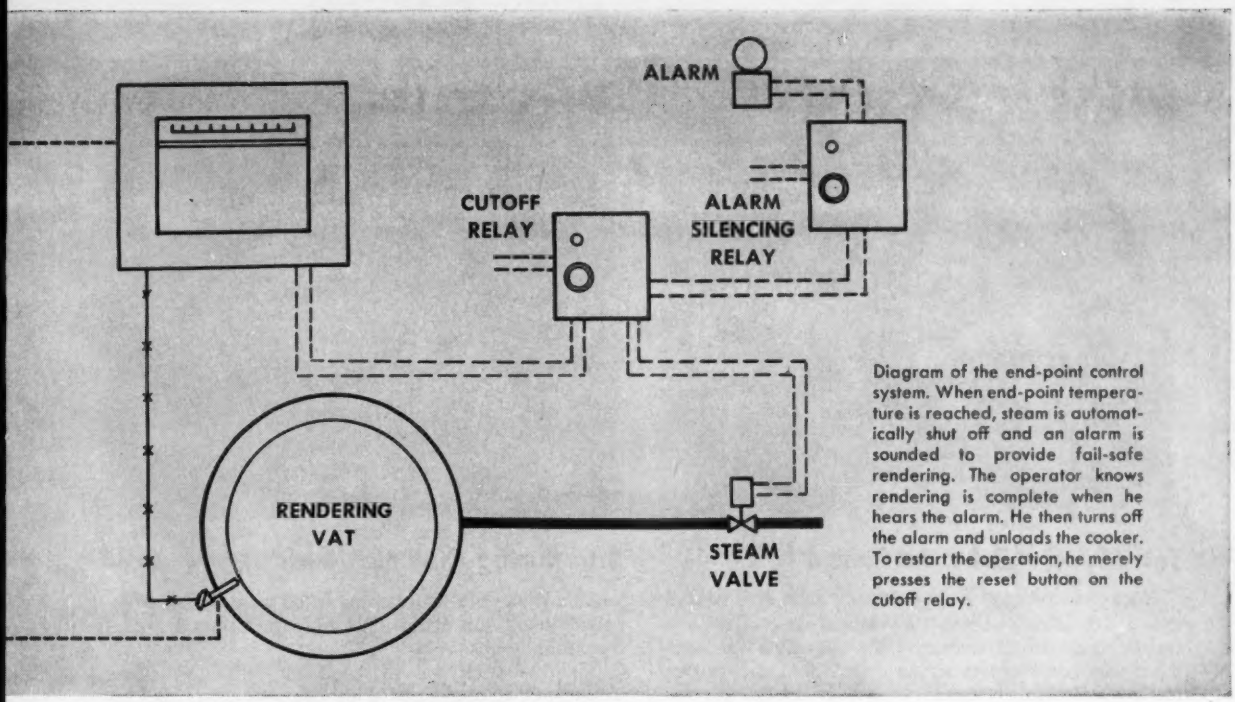


Diagram of the end-point control system. When end-point temperature is reached, steam is automatically shut off and an alarm is sounded to provide fail-safe rendering. The operator knows rendering is complete when he hears the alarm. He then turns off the alarm and unloads the cooker. To restart the operation, he merely presses the reset button on the cutoff relay.

improves dry rendering

AMIF *system prevents under- or over-cooking*

Maximum production of edible and inedible fats and high-grade cracklings comes only with close control of end-point temperature. Control of this variable is extremely critical, because temperature increases very rapidly at the point in the cook when moisture is at a minimum. AMIF system provides the sensitive, accurate control you need. It can bring you consistently higher yield and better color and keeping qualities, plus savings in heating costs . . . and can be used in both vacuum and pressure rendering.

The system *directly* measures liquid fat temperature. It consists of an *ElectroniK* strip chart recorder connected to a special thermocouple installed in the jacket of the rendering vat. This rugged thermocouple is made of specially tempered metal to resist shock and abrasion, and is flush mounted for freedom from obstruction. Its proximity to the charge makes it extremely sensitive to product temperature change. This thermocouple flashes the complete rendering story to the recorder, which keeps a continuous record of what goes on in the vat . . . shows at a glance when end-point is near or has been reached. It even reveals temporary stops of melter paddles.

The system can be equipped with automatic control to shut off steam and sound an alarm, enabling the operator to dump the cooker load at the critical end-point.

This basic temperature measurement method was pioneered by the AMIF on edible fats and oils. Subsequent work by Honeywell engineers with leaders in inedible rendering has further proved the distinct advantages of the system.

Your nearby Honeywell field engineer can give you complete details on this control system. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

Test-Market 'Coke' in Cans

Coca-Cola in cans is currently on sale in Brockton and Lynn, Mass., and in Providence, R. I. The test marketing is being conducted by Coca-Cola to determine whether there is an untapped domestic market for the soft drink in cans.

Though this is the first domestic test of Coke in cans, it has been exported to American military installations overseas for several years.

The can is simply designed and uses the company's familiar red and white colors. Cans are supplied by American Can Co., Continental Can Co., and several other suppliers. **Circle 300 on Reader Service Card**

Introducing the "Fish-wich"

Blue Water Seafoods has marketed a breaded ready-to-cook fish portion designed to fit perfectly on standard 3-in. round buns.

The "fish-wich", as the processor calls it, is aimed at the growing popularity of hot fish sandwiches, and has a consumer as well as an institutional market.

The processor's Portion-Pak line offers the standard 4-oz. portion as well as the new 4-oz. square. The line also includes 3-oz. portions, 2-oz. squares, 2-oz. long portions, and a jumbo 5½-in. portion (three to the lb.) fast gaining popularity as an ingredient of "hero" sandwiches.

Introduces Frozen Gravy Concentrate

Good news for the institutional trade is the Hayden House frozen concentrate turkey giblet gravy roll. Prepared by defrosting, adding water, and heating, the product makes it economical and simple for restaurants to prepare individual portions of turkey gravy to serve with frozen poultry parts.

Each frozen roll gives up to 40 servings of gravy and may also be used for making turkey broth.

The frozen gravy roll is designed as a companion product to the processors popular 9-lb. frozen turkey meat roll.

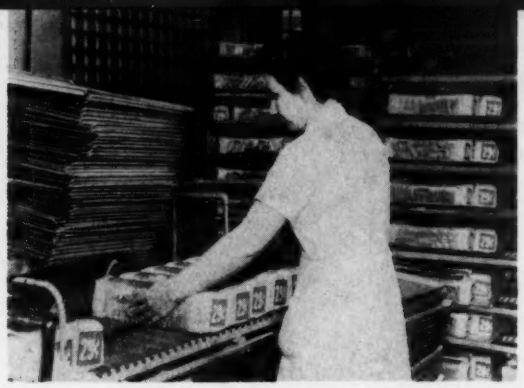
Markets Cola in a Straw

Fast gaining popularity with the Chicago hula-loop set is Milko Products new Sip-a-Cola. The moppets can either eat or drink the product.

The product packed inside a 10-in. straw may be eaten like candy or mixed with water to make a cola-flavored beverage.

The Milko line also includes Sip-its in assorted flavors which can be mixed with milk or water.

Sold individually for 1¢, the straws are packed in a 150-unit counter display box with a cut out lid that folds back.



Wrap Boosts Sales 500%

Retail sales of king-size loaves of bread from Hauswald Bakery are up 500% thanks to a new package.

Marketed in a conventional wrapper to meet a consumer demand for larger loaves, the bread didn't sell. The extra-long loaf couldn't take handling and the bread had to be used quickly before it went stale.

Now, the bread is packed in a polyethylene wrapper with waxed paper ends. The tough film takes rough handling but also provides a good view of the bread. It can also be tightly rolled to reseal the half-used loaf.

Film is produced by Union Carbide Plastics Co.

Circle 301 on Reader Service Card

5 New Products Go National

Three newest Pillsbury dessert mixes to move into national distribution are Lemon Chiffon Float Mix, Chocolate Boston Cream Pie, and Vanilla Boston Cream Pie.

The Lemon Chiffon Float Mix is a chiffon cake floating on a light lemon sauce. The two pie flavors are prepared from pouches of cake mix, filling, and icing. All three desserts are made by adding milk, eggs, water.

Also in national distribution are Pillsbury's Instant Mashed Potatoes and Quick Hash Brown Potatoes, These have completed test marketing in Syracuse, N. Y., Sacramento, Calif., and Wichita, Kan.

Champions Spark Cereal Cartons

A visual approach to the Wheaties slogan, "The Breakfast of Champions" has prompted General Mills to illustrate the cereal cartons with figures of sports champions.

All three sizes—1 lb., 2-oz., 12-oz., and 8-oz. to carry sketches of a football player, track star, or baseball player. The familiar orange and blue colors have been retained but the box now sparkles with a cleaner, brighter look.

Side and back panels still carry recipe and premium information.

Another Convert for Aluminum

Latest food company to turn to aluminum cans is Gunther Brewing Co., Baltimore. Development of the package was a joint project of the brewer, American Can Co., and Kaiser Aluminum and Chemical Corp.

The package is a seamless drawn can fabricated from rolled aluminum sheet. Sidewall and bottom are in one piece, a feature that eliminates the side seam and bottom closure of conventional cans.

The distinctive red, white, and black labels are printed directly on the tall can.

Circle 302 on Reader Service Card

Now Rent a Laboratory Homogenizer

For Only $75.00 per Month

...and see for yourself how Gaulin Particle Control improves product quality and reduces costs

Now, for a few dollars per day, you can have a laboratory homogenizer in your plant to explore the advantages of Gaulin Particle control on your product . . . to produce superior dispersions, emulsions or blend. No special skills are required to operate the machine. It is quickly and easily disassembled for inspection and cleaning.

Maximum capacity is 15 gph; minimum processable sample — 1 pint; pressures to 8000 psi continuous, 10,000 psi intermittent.

Remember, the rental cost is applicable against the price of the machine.

Write for more information and bulletins on the Gaulin Laboratory Homogenizer LH-55, Sub-Micron Disperser SMD-55, Homogenizers H-55.

Gaulin RE* Two-Stage colloid Mill — Model 2A — is available for processing quantities as small as 8 ounces, and is invaluable for research, laboratory or pilot plant applications. Also available on rental basis.

Gaulin TRADE MARK

MANTON Gaulin

MANUFACTURING CO. INC. EVERETT, MASS.

73 Gorden Street, Everett 49, Mass.

World's largest manufacturer of stainless steel reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills.

Packages & Products

TEST MARKETING of Tropicana concentrated orange drink packed in aerosols has been successfully completed. Nitrogen is the propellant used in the 16-oz. can. No refrigeration is required for the product which makes over ½-gal of beverage.

New Product Shorts

Lima Beans and Ham is newest canned product from Nalley's Inc.

Heat-and-Serve Mari Twists introduced by Buitoni Foods is a new form of spaghetti combined with meatless marinara sauce.

Maple Sugar is the newest flavor addition to the Swans Down cake mix line.

Frozen Pizza Kit has been added to the prepared frozen line of Dorann Foods, Inc.

Two New Flavors of Kool-Aid—imitation fruit punch and imitation pineapple-grapefruit—have been marketed by General Foods.

Test-Marketed by Borden Foods Co. is a ready-to-bake coffee ring with raisins and frosting.

Packaging Briefs

Polyethylene Resin developed by U. S. Industrial Chemicals Co. imparts a balance of slip and anti-block properties to film used for processed foods. (303)

"Breathing" packaging film manufactured by Plax Corp. is reported as the first instance of oriented polystyrene film to be used for produce packaging. (304)

"One-Glass" size bottle has been introduced by Pepsi-Cola in the New York City area.

Circle key numbers on Reader Service Card

Just Between You and Your Customer

Faith in the quality of a product will bring your customers back again and again. In keeping that faith, your package must play a vital role.

Product protection that never lets the customer down is Riegel's business. We offer you a choice of more than 600 different materials... designed for protection first... with equal stress on low cost, high packaging speed, and eye-catching appearance. Papers, foils, films and combinations... waxed, coated, printed, or plain... tailor-made to your needs. Riegel research and manufacturing versatility can help your sales. For technical advice or samples, write to Riegel Paper Corporation, 260 Madison Avenue, New York 16.

Brach's new Milk Chocolate JOTS are carefully and colorfully protected by a special Riegel Pouch paper, gravure printed in 8 colors and heat-seal coated. Formed and filled on pillow packaging equipment.

Riegel

PROTECTIVE PACKAGING MATERIALS

It's the Nash!

The ability of Nash Compressors to maintain original performance over long periods is no accident. Nash Compressors have but a single moving element, the Nash Rotor. This rotor is precision balanced for long bearing life, and it revolves in the pump casing without metallic contact. Internal lubrication, frequent cause of gas contamination, is not employed in a Nash. Yet, these simple pumps maintain 75 lbs. pressure in a single stage, and afford capacities to 6 million cu. ft. per day in a single compact structure.

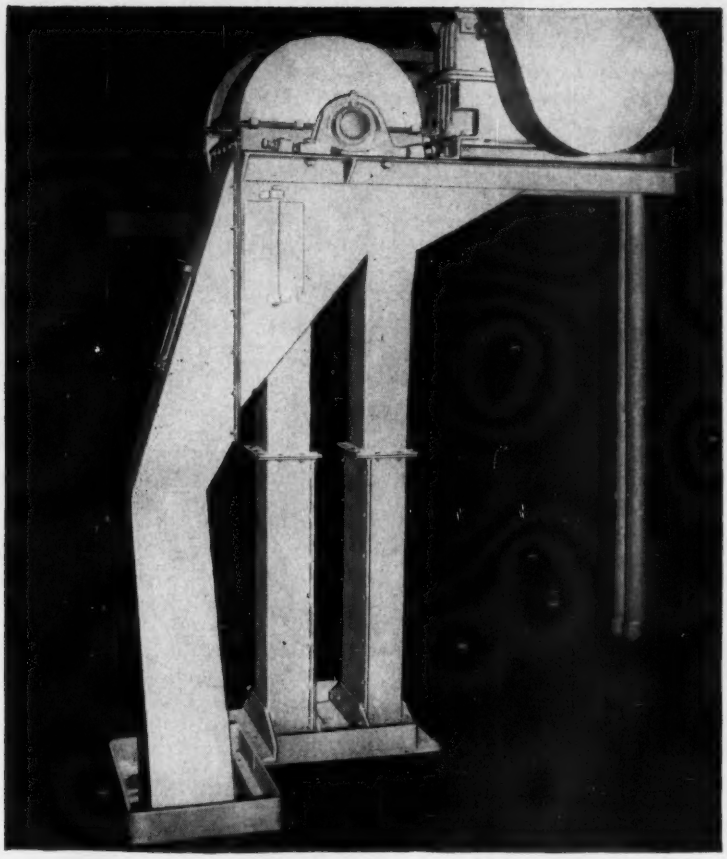
Nash Compressors have no valves, gears, pistons, sliding vanes or other enemies of long life. Compression is secured by an entirely different principle of operation, which offers important advantages often the answer to gas handling problems difficult with ordinary equipment.

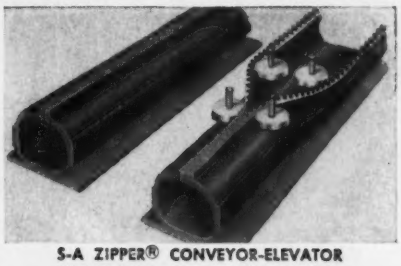
Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. Because there are no internal wearing parts, maintenance is low. Service is assured by a nation-wide network of Engineering Service offices. Write for bulletins now.

- No internal wearing parts.
- No valves, pistons, or vanes.
- No internal lubrication.
- Low maintenance cost.
- Saves floor space.
- Desired delivery temperature Automatically maintained.
- Slugs of liquid entering pump will do no harm.
- 75 pounds in a single stage.

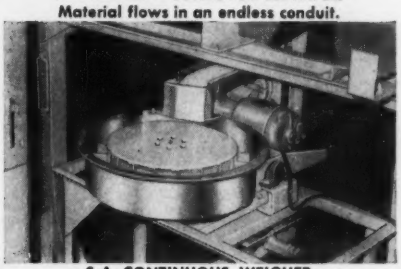
NASH ENGINEERING COMPANY
312 WILSON, SO. NORWALK, CONN.

STEPHENS-ADAMSON





S-A ZIPPER® CONVEYOR-ELEVATOR
Material flows in an endless conduit.



S-A CONTINUOUS WEIGHER
Continuous accurate weighing for gravimetric feeding operations.

S-A VIBRATING CONVEYORS
Natural Frequency Conveyor

SPEEDS EFFICIENCY...LOWERS COST IN FOOD HANDLING

When you invest in bulk handling equipment, the true cost is the price divided by years of satisfactory, efficient service. Unless you are presently one of the thousands of users of STEPHENS-ADAMSON Bulk Handling Systems you haven't discovered the most profitable answer to the above formula. STEPHENS-ADAMSON engineers and builds several types of conveyors for the chemical industry, each providing distinct advantages over the other for certain bulk handling situations. Thus, STEPHENS-ADAMSON recommendations are always based — not on a desire to sell a particular type of conveyor — but the most efficient type of system for the requirements involved. To acquaint you with the versatility of STEPHENS-ADAMSON engineering, we are preparing a special book on Food Handling. Write for your copy.

MORE S-A EQUIPMENT FOR PROFITABLE FOOD HANDLING

- S-A BOX CAR UNLOADER
- S-A SWIVELOADER® Centrifugal Thrower Units.
- S-A TELLEVEL® Automatic Bin Level Controls
- S-A CURVE CROWN® Pulleys
- S-A CARRIERS
- S-A CAR PULLERS
- S-A SHIP TRIMMER
- S-A FOOD SLICE SEPARATOR
- SEALMASTER Bearings

WRITE FOR LITERATURE ON FOOD HANDLING EQUIPMENT

S-A
ENGINEERED BULK HANDLING SYSTEMS
STANDARD MATERIALS HANDLING PRODUCTS
SPEEDWALK® PASSENGER CONVEYORS
SEALMASTER® BALL BEARING UNITS
SPHERCO® BEARINGS & ROD ENDS

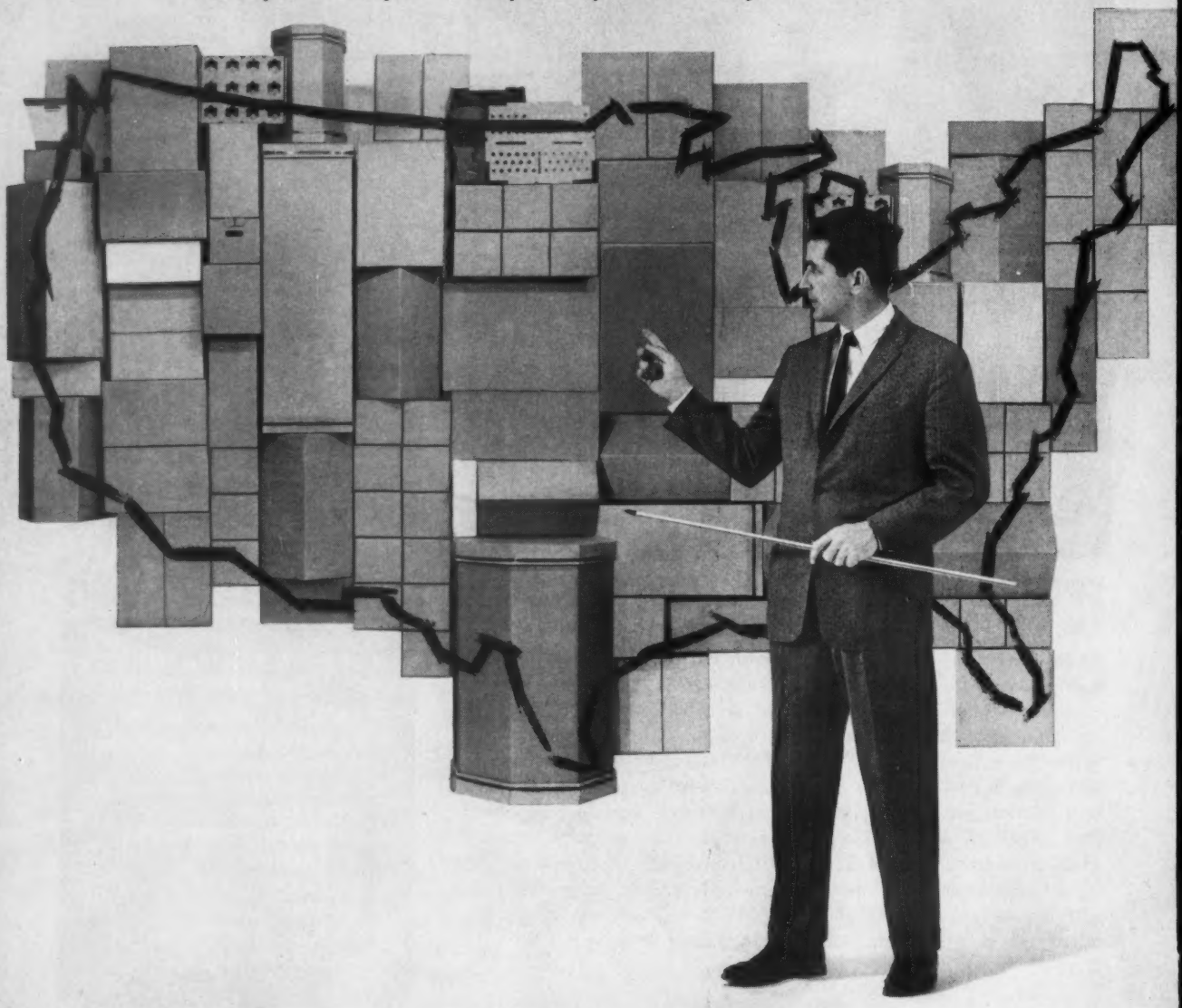
ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 6 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

GAYLORD GIVES LOCAL SERVICE
ALL OVER THE PACKAGING MAP

At every important packaging crossroads, coast to coast, there's a Gaylord Container plant or office to serve you. Your inquiry brings a quick reply — with no detours through channels or over mountains of red tape.

Avoid the byroads. Take the high road to full packaging flexibility. Go Gaylord. Call your friendly nearby G-Man today.



GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

Which of these features do you look for in a FOOD OR BEVERAGE HOSE?

Freedom from Odors and Taste?
Ease of Cleaning and Sterilizing?
Transparency?
Flexibility?
Long Service Life?
Wide Range of Standard Sizes?

TYGON® plastic TUBING B44-3 *combines them all!*

Remaining flexible throughout the full range of normal operating temperatures, Tygon plastic Tubing, Formulation B44-3, is also as clear as glass, permitting visual inspection and control of flow.

Non-contaminating and non-toxic, Tygon Tubing B44-3 neither imparts nor absorbs taste or odors, is safe with even the most flavor-sensitive products.* Because of its smooth, hard bore, Tygon Tubing is easily cleaned, can be sterilized with steam (open end method) or bactericides.

Tygon Tubing is non-aging, highly resistant to abrasion, and has a flex life 10 to 12 times greater than rubber. More than 65 standard sizes, up to 4" I.D., are available in continuous lengths.

*For processed milk and milk products, use Formulation B44-4.

See why Tygon Tubing, Formulation B44-3, is almost universally the preferred plastic for handling foods and beverages. Get complete information — write today for your free copy of Bulletin T-97.

443-F

PLASTICS & SYNTHETICS DIVISION

U. S. STONEWARE
AKRON 9, OHIO

OUR 100th YEAR

TYGON is a registered Trade Mark of The U. S. Stoneware Co.

CARING FOR WAXED FLOORS IS . . .

A cinch with Sanax

It waxes as it cleans!

REDUCES THE FREQUENCY OF REFINISHING

Sanax was developed to permit frequent cleaning of waxed floors *without washing away the finish* . . . and to eliminate waste in wax and labor. A neutral liquid soap with a wax base, *Sanax* not only quickly removes dirt, oil, and grease, but *leaves a thin film of wax.* In fact, regular use of *Sanax* to machine-scrub or damp-mop waxed floors *actually prolongs the life of the finish,* and thereby reduces refinishing costs on a year-to-year basis.

Like all *Finnell Fast-Acting Cleansers, Sanax* is specially designed for the greater speed of machine-scrubbing, and works as effectually in a *Combination Scrubber-Vac* as in a *Conventional Scrubber-Polisher.* And because *Sanax* is processed from pure vegetable oils, it's *safe for all floors.*

A 100 Series General-Purpose Finnell 11, 13, 15, 18"

Find out how you can simplify and reduce the cost of caring for waxed floors. *There's a Finnell Floor Specialist nearby* to help you choose the waxes and cleansers that are *exactly right for your needs. Finnell* makes a complete line, so you can depend on unbiased advice. In fact, *Finnell makes everything for floor care!* For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5709 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

- **A mild liquid wax-soap for machine-scrubbing or damp-mopping waxed floors**
- **Leaves a lustrous anti-skid protective finish**
- **Highly concentrated . . . economical to use**

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

Better Modernize "Like Sixty" for '60's!

No need for progressive food manufacturers to worry about 1958. With sales and profits up, and good sailing ahead, they now can even write this year off as a good one.

But they do have to look to their laurels in the '60's. For on the whole, the food factories are not effectively equipped for the future.

Plan '60 for growth and profits

"Plan '59–Modernize Now for Growth and Profits" was the theme of the October '58 issue of FE. Change it to "Plan '60," and the key points in that issue are even more true today.

Obsolescence is too high in food factories, more than half of the equipment being over 10 years old. At the same time, the wage spiral maintains a tight squeeze on profits.

Yet dynamic trends in food consumption and marketing offer new opportunities to those firms that equip to produce new and more convenience products and packages.

And there are other important reasons for modernizing for the '60's. One is to take advantage of new food frontiers abroad, particularly in Western Europe. (See FE Aug., p. 39, and this issue p. 39.) Another is to protect domestic markets from increasing imports of top-quality and specialty foods from Western Europe.

When a Dutch canned ham, for example, sells in a New York supermarket at a lower price than the equivalent domestic product, foreign competition becomes serious reality. And remember: Europeans not only are skilled in export operations, but most of the nations have to export manufactured products to finance imports of needed raw materials.

Note, too, that food plants of leading companies in Western Europe are highly mechanized, and that labor costs only about one-fourth as much as in the US. Then consider these points: Firms over there know how to produce quality products that can compete in anybody's market. And they carefully control quality of exports.

With the rapid industrial progress taking place in Europe, and with exports of consumer durables and capital goods increasing, the nations there will have more money to spend. This can increase expenditures for imported American processed foods. Or it can go for raw food materials to be processed both for the domestic markets and for export.

Yes, you definitely should take Europe's soaring sixties into your reckoning when you plan your modernization program.

Take tip from leader who knows

As a yardstick against which to measure your plans, let's take a look at a leader: In the fiscal year '59-'60, General Mills will invest no less than $25 million in new and more modern facilities. This comes to 148.8% of net profit for the past fiscal year!

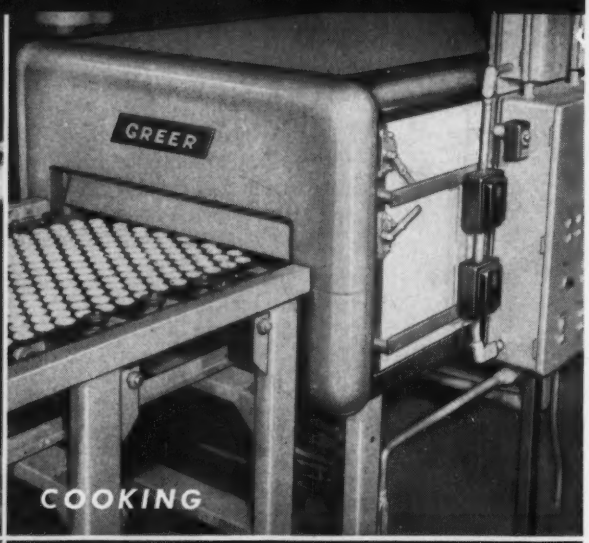
General Mills considers this program a 'must' for long-range growth and success. To meet the challenges and apportunities of these changing times, GM is changing itself. To keep step with progress, it is bridging the gap of obsolescence and renewing itself in youth.

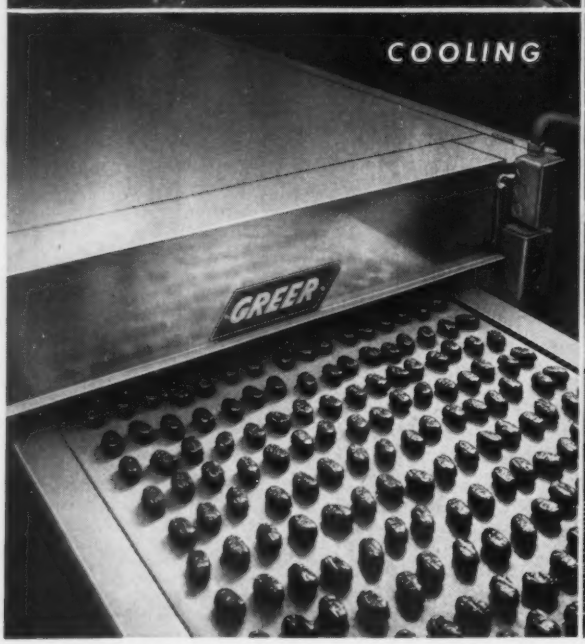
It is stepping up research as insurance against the future, and upping production capacity and efficiency to serve new markets and offset spiraling labor costs. At the same time, it is gearing for more business abroad.

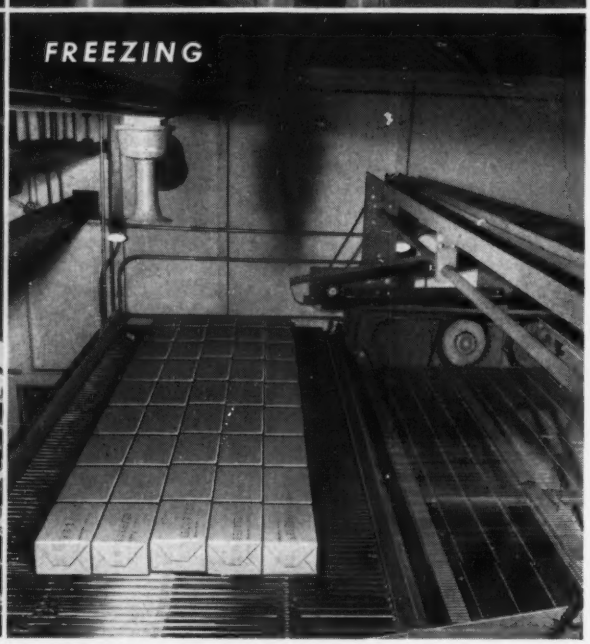
To paraphrase the recent, but already famous statement by General Foods' President Mortimer on advertising: The surest way to overspend on modernization is not to spend enough to do a job properly.

That is today's challenge in this dynamic world of food manufacturing.

GREER IDEAS PRODUCE A BETTER WAY...







Authorities agree — continued success in food processing depends on the introduction of new products. Why not draw on Greer's 42 years of experience in continuous production techniques? Put Greer ideas to work, producing a better way to new products for you. For complete information on Greer's revolutionary new all-inclusive development-through-production service —

Call or write **J. W. GREER COMPANY**

Wilmington, Massachusetts • Sales Engineering Offices, Boston, Mass., Chicago, Ill., New York, N.Y., and San Francisco, Calif.

BRINGING BETTER FOOD TO MORE PEOPLE AT

...TO NEW PRODUCTS

Now Greer offers all-inclusive program in Development, Pilot Testing, Production Planning, and Equipment Design, Manufacture and Installation.

Food Processors in every field can put new products on the market sooner, more economically than ever — thanks to Greer. We will assume responsibility for your new product at any stage in its planning . . . advise in its formulation . . . demonstrate production in laboratory . . . test on pilot scale . . . scientifically expand to full production. Then we'll design and build the required machines, install them in your plant, and start them turning out *exactly the product you had in mind* at the lowest possible cost.

Whether your new product involves meat, vegetables, candy, ice cream, or baked goods . . . whether it requires Mixing, Forming, Coating, or Dusting . . . Baking, Broiling, Roasting, or Frying . . . Cooling, Freezing, or what have you — we will engineer it into production for you!

HERE ARE SOME OF THE QUESTIONS THIS NEW GREER SERVICE ANSWERS

- What chemical and physical factors will change in expanding from test kitchen to full production quantities?
- Must formula be changed for full-scale production?
- Can more economical ingredients be used without adverse effect?
- What factors effect taste, color, texture, shelf life?
- What effects do various metals have on product?
- What is ideal order of processes?
- How must product be protected during production?
- Must atmospheric environment be governed, and how?
- How can your present plant best accommodate a new production line?
- How can present lines be altered for new product?

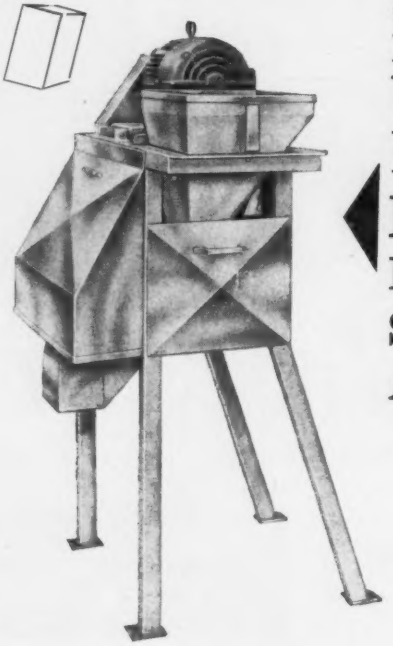
GREER

LOWER COST

Versatility

is the big word for the Urschel Model **RA DICER, STRIP-CUTTER AND SLICER**

For Pickles, Vegetables, Fruits, Candied Fruits, Fruit Peel



The New Urschel Model **"RA" Dicer, Strip-Cutter and Slicer** gives you these *new* advantages: *widest range of cuts—from relish sizes of 1/16" x 1/8" x 1/8" to full 3/8" cubes, strip-cuts and slices ▶ more perfect dices than ever before ▶ operating speeds are quickly changed to provide the best dicing efficiency for various products and size cuts desired—means maximum capacity and higher quality cuts ▶ saves your valuable process syrups ▶ no product crushing—all the juice is locked in ▶ plugging is avoided by more direct product transfer from slicing to dicing knives ▶ stainless steel product contact surfaces ▶ one motor instead of two—mounted above operating parts for complete protection ▶ capacity up to 10,000 lbs. per hour*

The new "RA" Dicer replaces the model "R" unit in the Urschel line

Write today. Complete information promptly on request.

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL LABORATORIES INC.
VALPARAISO INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products

THIS FAMOUS LINE OF FIBRE CONTAINERS
ADDS A NEW WINNER...

Once again, it's Canco that introduces the *ideal* in a fibre container. This time—one that improves and perfects the packaging of refrigerated biscuit dough.

This new "String-Pull" container provides easier, no-damage opening. The string is pulled spirally the length of the container. A simple twist or a light tap on the edge of a table opens the package.

This innovation makes Canco's "String-Pull" container the finest package available for biscuits today. Ask your Canco salesman to show you samples. In fact, see Canco's full line of outstanding fibre containers. Each one is *ideal* in quality and value!

CANCO Division AMERICAN CAN COMPANY

NEW YORK • CHICAGO
NEW ORLEANS • SAN FRANCISCO

CIRCLE 37 ON READER SERVICE CARD 37

IT TOPS THEM ALL!

FRITZSCHE'S TROPICAL BANANA

Talk about TOP BANANA—well, here it is! A luscious new imitation banana flavor developed by our laboratories to give your finished goods a fuller, richer, more flavorful effect. Observe it in marshmallows, fondants and hard candies; also in cake mixes, toppings, ice cream, or in puddings and other desserts. You will be delighted with its smoother, more natural delicacy—the true-to-type flavor of mellow-ripe banana. Try it on our recommendation!

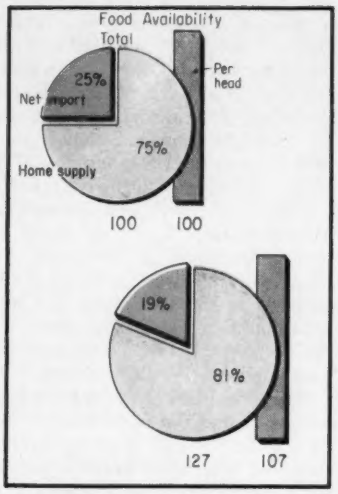
Write for a FREE test sample of IMITATION TROPICAL BANANA FLAVOR No. 28510—today!

FRITZSCHE BROTHERS, Inc.

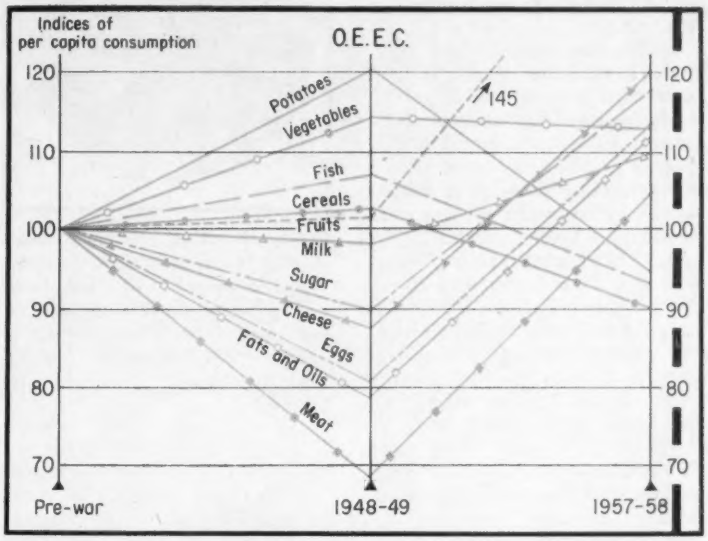
A FIRST NAME IN FLAVORS SINCE 1871

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. **Factories:** Clifton, N. J. and Buenos Aires, Argentina.



BIG CHANGE in Western Europe's food availability and home stocks since '39. Supply: Up 6%. Net imports: Down 6%. Food per capita: Up 7%. (OEEC chart)



DIETS HAVE BEEN UPGRADED rapidly by Western European peoples in post-war years. Improvements have not only offset wartime down-trend but go far beyond pre-war levels, as this OEEC chart of changes in structure of food consumption shows.

Traveling FE Editor Witnesses

Food Revolution in Europe

FE Reports on Europe—Part II: Across Western Europe

Trends highly significant to US food makers pinpointed . . . on-the-spot insights into developments cited . . . as editor reports observations, interviews across West Europe

TO AN AMERICAN traveling in the food field of Western Europe, it is evident without statistics that food manufacturing and packaging is a booming business there. You sense it from the fast production pace in highly mechanized food factories . . . from the way these plants are being expanded . . . from the new and latest equipment installed.

You see it too in the new self-service retail food stores, with their wide variety of nicely packaged processed foods on display and their busy checkout counters.

You feel it keenly at an international food exhibit, where quality and convenience foods of several nations attract crowds of admiring and wishful consumers and distributors. And you get it from women representing consumer groups in various countries.

But with all that, one is amazed to learn that the business of an American food manufacturer with plants in England has increased 16-fold since World War II. We refer to H. J. Heinz Co., whose name is a household word in Britain, who caters to the Queen, and whose recent new plant dedication ceremony was attended by the Queen Mother.

Heinz, incidentally, introduced canned baked beans to the British and now has 80% of a market that enjoys higher per-capita consumption of this item than in the United States. This American pioneer in the international food business also sells some 60% of the manufactured soup consumed in the United Kingdom, and it does quite nicely in baby foods and other products.

What's behind this phenomenal foreign food conquest? Certainly production know-how and product quality—plus marketing savvy that excels anything foreign food manufacturers have developed. But there is even more to it than that. There's the demand in Europe for convenience and quality foods.

Consumer income has been boosted by a remarkable new eco-

FRANK K. LAWLER

Editor, "Food Engineering"

He attended International Food Congress and investigated food trends and manufacturing in six countries of Western Europe.

nomic vitality in Western Europe. The UN's index of general industrial production rose from 100 in '53 (base year) to 118 early this year for Britain, and shot up to 150 for Italy. It stands at 153 for West Germany and 157 for France, exclusive of construction.

That's why people have more money to eat better. And with more housewives working and most ex-maids employed in business and industry, convenience foods become important. Then the trend to self-service retailing favors processed and packaged items and puts new products in view for impulse buying.

It is significant that Heinz in England sent a marketing man to the US to study self-service retailing in minute detail. Now the firm is building goodwill among retailers and speeding progress in distribution by giving expert help in establishing and operating self-service stores.

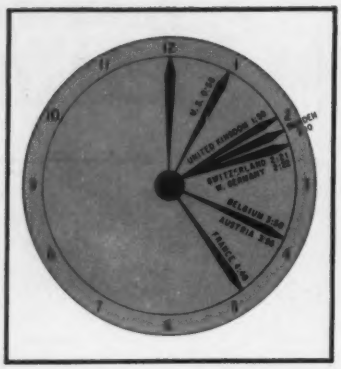
Yes, it is the trend of the times that is creating a slow gold rush in modern food manufacturing and retailing. And alert American food companies are participating.

How Food Executives See It

Says William T. Brady, president of Corn Products Co., which has plants in Western Europe: The world's food industry is on the threshold of booming, vigorous, spectacular growth. Underlying this growth is the world-wide economic surge, spearheaded by such developments as the Common Market, swelling populations, and pyramiding human needs and desires.

James A. Farley, chairman of Coca-Cola Export Corp., observes after a tour of Western Europe that the Common Market is "widening existing consumer markets and adding wholly new markets through the explosion of consumer purchasing power." This whole process, he says, is hastened by the growing volume of American or American-inspired business activity overseas. And taken together, "the forces contributing to European prosperity have made Europe the second citadel of free world strength."

Coca-cola has established 30 new foreign bottling plants in the past year, 12 of them in Western Europe.



COST OF MEAL in terms of hours of labor in various Western European nations, compared to US. Data based on expense of standardized meal for four, divided by hourly earnings in manufacturing. (Courtesy National Industrial Conference Board)

A. B. Heilig, treasurer of Campbell Soup Co., lists foreign expansion as one of three sources for future growth of his company. The other two are new products and increased per-capita consumption. Campbell opened its first overseas factory last summer at Felegara, Italy, to make tomato soup and V-8 juices. It is just completing a plant in England, and is beginning to market soups and vegetable juices in the British Isles. And Campbell is exploring the advantages of establishing operations in still other foreign countries.

Kellogg Co, has a huge plant in Manchester, England, and it opened a new factory at Oslo, Norway in May, and is working on other developments overseas, according to President Lyle C. Roll.

Kraft Foods Div. of National Dairy is well-established in Europe. Commenting on distribution trends there, President J. C. Loftis says; "We are well aware that in many areas of Europe, supermarkets as such have not become as evident in growth as in the States. We do feel, however, that this method of moving food products more efficiently and at lower distributive cost will ultimately become just as much a part of the food picture on the Continent as it is in America."

Mr. Loftis observes, too, that the supermarket contributes greatly to the increase in the sale of food products. And we might add that any self-service store is a business booster.

General Foods is still another highly successful manufacturer in Western Europe, with an instant coffee plant in Germany and freezing operations in England and Sweden. GF also sells European-packed gourmet items in the US—another way to make food capital out of Europe.

Nestlé Co., with headquarters in White Plains, N. Y., is about as much American as European, although it originated in Vevey, Switzerland. It has 146 plants and distribution facilities in 30 countries. On the average, 1 of 3 European babies is fed on Nestlé products.

This firm looks at the entire world as a challenge and opportunity: "To be able to put into the hands of an underfed population products drawn from their own natural resources is one of the most urgent tasks."

The Pillsbury Co. exports overseas, and President Paul S. Gerot makes a significant point about convenience foods: They give the housewife more time for creative cooking, in which perhaps Europe excels America. There is nothing creative in the process of peeling a potato, he observes. And with the time saved by using his firm's potato flakes, the homemaker can experiment and be creative in the presentation of her potatoes. Mr. Gerot also says that the construction of food plants overseas offers an opportunity.

Libby, McNeill & Libby has a plant in England, and 25% of its business is foreign. And so it goes with leading US food firms.

A prime opportunity for this writer to check concepts formed during his European trip was afforded by Heinz in England. The managing director. Mr. F. G. Crabb, entertained the author at a luncheon with members of his board of directors. And in an enlightening and interesting discussion with these European food experts, several evaluations were tossed out for discussion. Since none was refuted, they are mentioned here:

1. European peoples are enjoying a high standard of living, and are eating better.
2. Europe is a ripe market for more quality and convenience foods.
3. Self-service is rapidly expanding and is the key to progress in Europe on a parallel to that in America.
4. Shortage of domestic help and

Refrigerator in the House?

Weakness of terminal link in frozen-food chain (OEEC data):

	Austria	Germany	Italy	Netherlands	Norway
Refrigerator or icebox	18	17	15	5	19
No refrigeration	82	83	85	95	81

increased numbers of working women is increasing the sale of processed and convenience foods.

5. A food product that is good enough to be very popular in one country also will be liked by people in other nations.

6. The Common Market will be very important, and it is desirable to have a plant in that area to take advantage of dropping tariff barriers.

7. European food machinery is good and usually is made by firms with considerable engineering know-how and good manufacturing facilities.

Heinz recently purchased a plant in the Netherlands, giving it a production facility inside the Common Market. Its plant near London is busy as a beehive, has 3,500 employees, is running 2 to 3 shifts a day, is being expanded and continuously modernized. And the firm recently opened a large ultramodern plant in the north of England.

US Food Firms Invest

It is obvious from the activity of our leading food firms that Europe is a new frontier for American food firms. And a just-completed survey of foreign capital expenditures by American companies provides a financial yardstick of this interest.

Made by the McGraw-Hill Department of Economics, this survey cites these investments in Europe by US food and beverage firms: In 1957, $21.1 million; '58, $19 million; planned for '59, $13.2 million; for '60, $15.8 million.

Our industry's capital expenditures in Europe are larger than in Canada, the latter being: In 1957, $10.7 million; '58, $9.7 million; planned for '59, $12.2 million; for '60, $14.4 million.

They should be larger, for Western Europe has a population of some 300 million consumers. The Common Market countries alone have 164 million—almost a second United States in population, as well as industrial vigor.

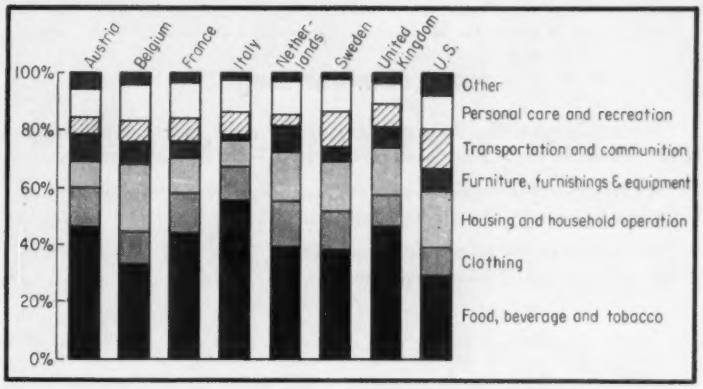
Completing the foreign investment score are these figures for Latin America: In 1957, $3.1 million; '58, $2.8 million; planned for '59, $4.0 million; for '60, $4.6 million. International opportunities lie in more than one direction.

For all foreign countries, capital expenditures by American food and beverage companies: In '57, $39.3 million, '58, $34.2 million; planned for '59, $31.5 million; for '60, $37.2 million.

It is significant that the figure for next year is up a sharp 18% over that for this year.

Exports of US manufactured foods and beverages are increasing, too—from $811.9 million in '58 to a projected $860.6 this year and $938.8 in '60. This means a 15.5% increase in two years.

To invest in Europe is to put money into a topnotch growth area. The Common Market area, with a population nearly as large as ours in the US, runs up a gross national product of only $125 billion, compared to $442 billion for the States. In other words, Europe as it is shaping up today is like a twin version of America—with 1920 over-all capacity and 1960 requirements. And this parallel applies to convenience foods.



WHAT CONSUMERS SPEND, in percent of income, on food and other items in Western European countries, as compared to US—1957 data. (Courtesy NICB)

Buying Rises Rapidly

Rate of expansion in consumer buying is swift, indeed. In three years, retail sales in four major European countries has increased 41.25%. (United Kingdom 22%; Germany 32%, France 41%, Italy 70%). And Europe's gross national product per capita is up 40% since 1948. Obviously, Europe is rapidly growing more prosperous. And to buttress this progress, Europe is investing about as much as the US in industrial capital equipment each year, although it has only 75% as much industrial production.

It is predicted by Publicis, a leading European advertising agency, that food and clothing consumption in Europe next year will be 25% higher than in 1953, with sales of consumer durables up 60%. The agency also points out that France could profit from an efficient, nationwide supermarket system, and that notable progress in this direction has been made in both Germany and Switzerland. European housewives who must buy eggs in one shop, meat in another, and fruit in a third are ready to flock to supermarkets.

Density of population in Western Europe favors supermarkets and economical distribution. There are 188 people per square mile on the whole (1956 data) compared to 51 in the US. There are 753 per sq. mile, in Belgium, 541 in the United Kingdom, 528 in Germany, and 203

New Market for US Poultry

Phenomenal export success is being chalked up by American frozen ready-to-cook poultry. No less than 22.5 million lb. were consumed by Western Europeans last year, 34 times as much as in 1955, USDA data reveal, and the demand is rising.

The Swiss alone ate 12½ million pounds in '58, and the item is popular with West Germans and Dutch. As a German food expert told the author, American poultry is a great improvement in quality and convenience over European fowl.

Food trends in Europe offer the opportunity to further increase sales—both to consumers and to restaurants.

Bill Simmons, Arkansas broiler freezer whom the writer met in Switzerland, says: "Continued market promotion by the American industry and USDA will pay off still more in the way of expanded markets."

Have Familiar Ring

"Grandmothers like to give advice, but today they don't know what foods to buy. Things have changed"—*Danish housewife.*

"When they purchase foods, women want freedom of choice between brands."—*French homemaker.*

"We need more information on labels, like you see on food made in America."—*Swiss housewife.*

in France. (By way of comparison, the figure for New York state is 330.) Even rural European markets are easy to reach, because farmers live in villages or towns with a population as high as 5,000. And self-service is taking over those markets.

About Cartels and Co-Ops

Many Americans are concerned about the power of cartels in Europe, but these are starting to lose their grip. And they will be further disarmed as governments clear the way for expansion at the expense of protection. This is true particularly in respect to food operations. Government officials are anxious to get more for their people's dollars through American style distribution with its freedom of product choice and "active pricing."

In Switzerland, the dynamic Migros retail food chain has licked cartels that refused to let it sell their products at reduced prices. Migros built its own factories and it also imports foods.

In some countries, e.g. West Germany, consumer buying cooperatives are pacing progress in better, cheaper foods. In the Central Union there are 285 consumer co-op societies and 2.5 million members, an executive told FE's editor. This organization operates 9,300 retail stores, has over 34 factories and a deep-sea fishing company, as well as insurance societies and banks. There are 96,000 employees, 11,300 of them in its factories.

The consumer union co-ops were ground under the Hitler heel, but came back after the war and now are praised by the government for their benefits to consumers. Their profits, minus suitable funds to finance future progress, are paid to members in dividends amounting to 3% of turnover.

Total turnover of the Union amounts to $670,000,000 annually. Its factories produce instant coffee—even instant ersatz coffee (made from roasted barley), for which there is good demand. They also supply canned vegetables and fruits, jams, cheese, chocolate, dessert powder, soups, wine, and frozen foods—plus many nonfood items.

One of the highlights of the author's trip in Europe was a visit to the Paris headquarters of Organization for European Economic Cooperation. OEEC has been a prime mover in European food distribution progress, and necessarily keeps its fingers on the pulse of the industry.

In the way of general progress, this organization cites a considerable development in self-service food stores, a strong trend toward the formation of voluntary chain co-ops, and retail buying groups, with a decrease in independent stores. It also reports the development of a very low-cost system of retail distribution involving stores handling a limited line of products which they retail at wholesale prices. These stores buy very large quantities of a few items, and they operate modestly equipped stores (most not self-service).

OEEC notes an increase in food vending machines, too, principally in Germany and the Scandinavian countries, with a beginning in France. The machines are located primarily in factories and in front of stores to serve customers after closing hours.

The number of self-service stores in the various European countries according to OEEC is as follows: Sweden, 5,000; Great Britain, 4,000; Germany, 3,200; France, 2,000; Norway, 1,300; Switzerland, 1,120; Netherlands, 800; Denmark, 400; Belgium, 200; Austria and Italy, a negligible number.

Western Europe's total comes to about 20,000 self-service units, and the forecast is for 25,000 by the end of this year. The rate of growth has been quite rapid, there being only 175 such stores 10 yr. ago and but 12,700 in 1953.

Where Frozen Foods Stand

Special efforts are being made by OEEC to increase facilities for producing and distributing frozen foods in Western Europe. Pilot studies are underway in France and Italy, two backward countries in respect to frozen products.

France has a mere 700 retail frozen food cabinets for a population of 45 million. About 12,000 tons of frozen food reach French consumers a year. Of this, only 1,000 tons are sold by retailers equipped with low-temperature cabinets, and 6,000 tons are handled by concerns with cold-storage type facilities. The remainder (fish and poultry) is marketed outside of the cold chain.

There is need and opportunity for larger frozen food operations in France.

Italy, too, is practically without retail frozen food facilities. Yet this country offers great possibilities for freezing fruits and vegetables, fish, poultry, meat, and cooked Italian specialty foods. OEEC considers prospects favorable in all respects for expansion of deep frozen foods in Italy.

The leader in freezing on the Continent is Sweden, where 15,000 tons of frozen items, 50% being fish, are consumed annually by a population of 7 million. Sweden has 12,000 low-temperature retail cabinets.

Norway's frozen food business amounts to 6,000 tons a year for a population of 3.5 million and 7,000 low-temperature cabinets. More than 80% of the volume is in fish.

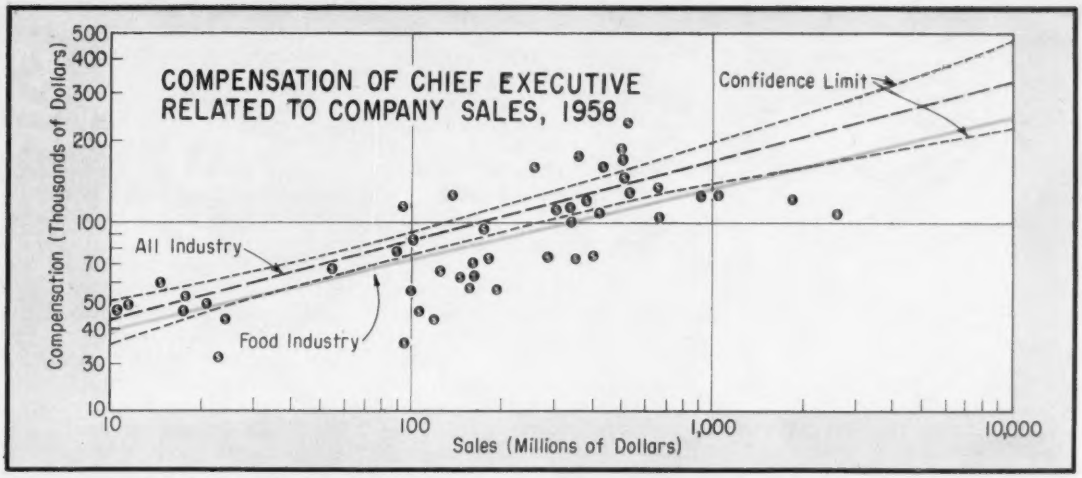
West Germany's 50 million inhabitants buy 10,000 tons of frozen products from 18,000 retail cabinets.

United Kingdom, with a comparable number of people, consumes 37,000 tons of frozen vegetables (mostly peas), 45,000 tons of frozen fish, and small quantities of frozen fruits and other foods. The number of cabinets in England has more than quadrupled since 1954 to 48,000.

In the Netherlands there are 8,000 retail cabinets selling 4,000 tons of frozen vegetables (principally peas and spinach), 2,000 tons of fish, and 500 tons of other products to a population of 11 million.

Switzerland is credited by OEEC with being the first country in Europe to develop a really effective cold chain. With a population under 5 million, it has 4,500 low-temperature cabinets. The Swiss consume 2,500 tons of frozen fish annually and considerable amounts of American poultry. The Migros retail chain has 350 self-service stores and sells 1,000 American chickens daily. —*End*

Watch for Pt. III in Oct. FE



MANAGEMENT SALARIES in food industry don't increase with company size to same extent that they do, on the average, for 23 industries surveyed. This is shown by widening spread between solid line (food industry) and broken line (all industry). Dots are actual payments to top paid officers of food companies.

Food Executives Get Pay Raise

Gain when all-industry trend is downward. But low profits and decentralization keep food salaries below general level

CHIEF EXECUTIVES among food firms earned bigger paychecks last year—in striking contrast to the over-all trend which saw lower compensation for top management of most industries throughout the country. Reason for this, primarily, is that food companies successfully met the challenge of the '58 recession by increasing sales and profits.

Nevertheless, top men in the food firms are still paid less, on the average, than the number-one executives in most other industries.

These are the key findings of the fifth annual survey of executive compensation, recently completed by McKinsey & Co., Inc., management consultants. Included were 791 leading companies in 23 major industry groups.

For study purposes, compensation was defined as salary, bonuses, and deferred accruals awarded during the year. It did not include company contributions to pension schemes, stock option awards, or other fringe benefits.

In 1958 total compensation paid chief executives in all industries declined—1.8% to be exact—for the first time since the McKinsey survey began in 1955. Concurrently, sales of these companies fell 3.1%, profits 11.7%.

Of the 23 industry groups, only 8 showed a profit improvement, while 11 reported a gain in sales, and 10 chalked up an average compensation increase for their chief executives.

In the face of this general decline, top management pay in the food industry jumped 4.8%. This was better than the average 3.4% sales increase, and 4.5% profit rise, that food companies experienced in '58.

Ranked against the other 22 industry groups, the food industry was 8th in sales improvement, 5th in profit improvement, and 4th in the size of increases granted to top executives.

Despite the industry's over-all gains in '58, food chief executives still receive somewhat lower compensation, on the average, than their counterparts in other industries.

The chart above shows the relation between sales and chief executive compensation by comparing a line of "best fit" for the food industry with a similar line for all 791

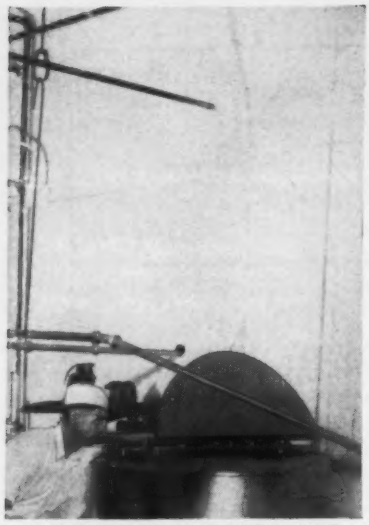
J. RICHARD GRIEB

McKinsey & Co., international management consultant firm, New York City

How Food-Company Chiefs Compare With 'Opposite Numbers'

(Comparison of average '58 payments to top paid executives in 23 industries at three representative company sales levels)

Rank	$50 Million		$500 Million		$1 Billion	
1.	Business machines	$85,000	Personal & household supplies	$202,000	Personal & household supplies	$265,000
2.	Tobacco	84,000	Steel	190,000	Steel	250,000
3.	Personal & household supplies	82,000	Business machines	185,000	Consumer metal prods.	235,000
4.	Nonferrous metals	78,000	Consumer metal prods.	180,000	Business machines	235,000
5.	Industrial metal products	77,000	Tobacco	174,000	Nonferrous metals	218,000
6.	Aircraft manufacturing	76,000	Nonferrous metal	171,000	Tobacco	217,000
7.	Petroleum	76,000	Textiles	163,000	Chemicals	210,000
8.	Automotive parts	76,000	Chemicals	162,000	Textiles	210,000
9.	Steel	75,000	Building trade	158,000	Rubber	200,000
10.	Building trade	74,000	Rubber	155,000	Building trade	195,000
11.	Consumer metal products	72,000	Industrial metal prods.	140,000	Paper	170,000
12.	Chemicals	71,000	Petroleum	140,000	Industrial metal prods.	170,000
13.	Industrial machinery	71,000	Automotive parts	140,000	Petroleum	170,000
14.	Textiles	70,000	Aircraft mfg.	137,000	Automotive parts	170,000
15.	Department stores	70,000	Paper	137,000	Aircraft mfg.	163,000
16.	Electrical equipment	69,000	Industrial machinery	132,000	Industrial machinery	160,000
17.	Rubber	68,000	Electrical equipment	130,000	Electrical equipment	155,000
18.	Public utilities	66,000	Department stores	125,000	Public utilities	152,000
19.	Paper	64,000	Public utilities	124,000	Railroads	151,000
20.	**FOOD**	**60,000**	Railroads	122,000	Department stores	148,000
21.	Railroads	59,000	Retail chain stores	118,000	Retail chain stores	148,000
22.	Retail chain stores	56,000	**FOOD**	**111,000**	**FOOD**	**134,000**
23.	Air transport	54,000	Air transport	81,000	Air transport	91,000



SANITILE WALLS

at less than

1/15th the cost of TILE

Thousands of famous food processors enjoy tiled-wall sanitary advantages without the expense of tile. Sanitile meets exacting requirements for sanitary, washable walls and ceilings... Sanitile creates a hard, gleaming ceramic-like surface that resists greases, condensation, moisture, steam hosing, acids, alkalies ... prevents fungus and mould.

Our 46 years specialization serving food plants will help you achieve unusual protection and economy. Sanitile is easy to apply by brush, spray or roller. Costs but a few cents per square foot. Write for specifications for your plant. The Master Mechanics Co., 2097 Columbus Rd., Cleveland 13, Ohio. The Master Mechanics Chemicals Co., (Canada) Ltd., Toronto, Ontario.

Serving the food industry since 1913.

MASTER MECHANICS

companies. The dots on the chart represent individual food companies, and the broken lines set confidence limits to allow for normal sampling error.

As can be seen, the food industry line is not only below the all-industry line, but it is, for the most part, even below the area that could be attributable to sampling error.

Why Not Higher Pay?

Relatively low chief executive compensation is not new in the food industry. It is related to several circumstances.

One of these influences is that compensation for top food executives does not increase with company size to the same extent that it does in most other industries.

The extent of such increase can be measured by the steepness of the compensation-sales line—the steeper the line, the greater the compensation increase per sales dollar. The steepness of the food industry line exceeds that of only five other industry groups.

In addition, compensation paid to chief executives of food firms varies widely from the compensation-sales line. If company size were the only influence on differences in compensation, all the dots would fall on the line. The variation in food industry compensation exceeded that in 16 other industry groups.

There are three important reasons why this pattern is characteristic of the food industry: (1) Low return on sales, (2) frequent merger and acquisition action, and (3) decentralization of management.

The food industry has not enjoyed as large a profit per sales dollar as many of the other industry groups. The food companies in this year's survey, for example, had net profits equal to 2.7% of sales, in contrast to the 6.6% earned by companies producing personal and household products (e.g., drugs, cosmetics, soaps). Interestingly enough, the compensation-sales line for the latter industry fell approximately as far above the all-industry line as the food industry line fell below it.

Moreover, within the food field itself, companies whose chief executives were paid less than the industry's average compensation had profits equal to 0.8% of sales. In contrast, firms whose top men were paid more than the average had profits equal to 3.4% of sales.

Thus there seems to be a strong tie between compensation and return on sales. And the lower return in the food industry has apparently been a contributing factor to the comparatively lower level of top executive compensation.

Merger and acquisition has long played a significant role in the growth of individual food companies. A comparison of the smaller with the larger companies in this survey shows a much higher frequency of mergers and acquisitions over an extended period in the larger companies.

Although these actions increase the size of the resulting entity, they seldom influence the chief executives' compensation to the same extent as growth by other means. A merger or acquisition usually brings into the existing company highly paid executives, who represent a large payroll expense. As a result, there may be some reluctance to increase the compensation of the man at the head of the corporate staff.

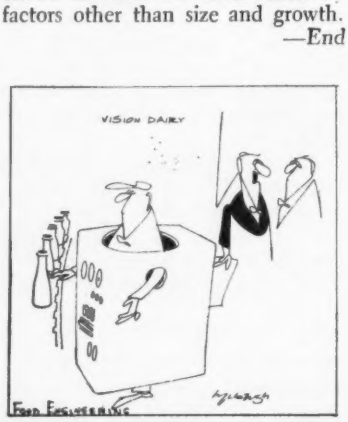
In addition, the many newly acquired executives are often experienced and competent men, capable of assuming heavy responsibilities. Thus higher compensation for the chief executive may seem less imperative.

Decentralization of management is a characteristic tendency of the food industry—largely because of market, product, and distribution problems.

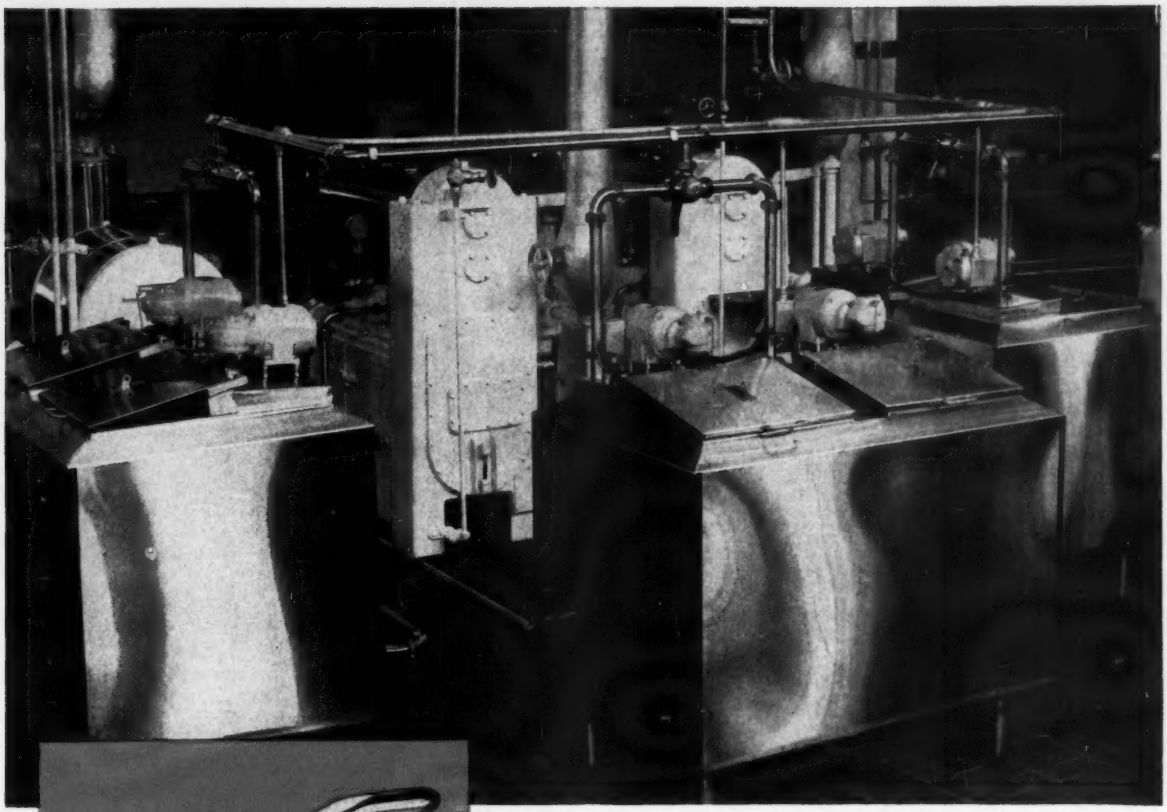
In a highly decentralized organization, the impact of growth on management compensation must be recognized at the divisional level. And it is easier to relate growth and compensation directly at that level than at the top corporate level.

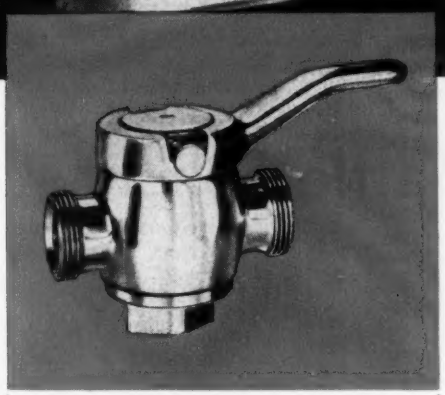
Although the company's growth may be recognized in the compensation of the chief executive, division management must also share in the results of this growth. In this situation, increases in chief executive compensation are either slightly deterred or must be determined by factors other than size and growth.

—*End*



"We're breaking the men into automation gradually."





Texas Ice Cream Plant Keeps Processing Efficient with TRI-CLOVER "Lift-Type" PLUG VALVES

The modern ice cream making equipment shown above is typical of the efficiency-minded operation at Oak Farms Dairies, Dallas, Texas. Also typical is their choice of Tri-Clover "Lift-Type" Valves and Fittings.

These smooth working valves give quick, positive control of liquid flow at all times. And, like all Tri-Clover Division products, they contribute to overall efficiency in these ways: ease of cleaning, unmatched protection against product contamination, and years of reliable service.

Our engineering staff, backed by many years of practical experience and specialized knowledge in completely sanitary handling of liquid products, will gladly help you solve your processing problems.

See your nearest Tri-Clover Distributor

EXCLUSIVE "CAM-ACTION" GIVES SMOOTH, EASY OPERATION

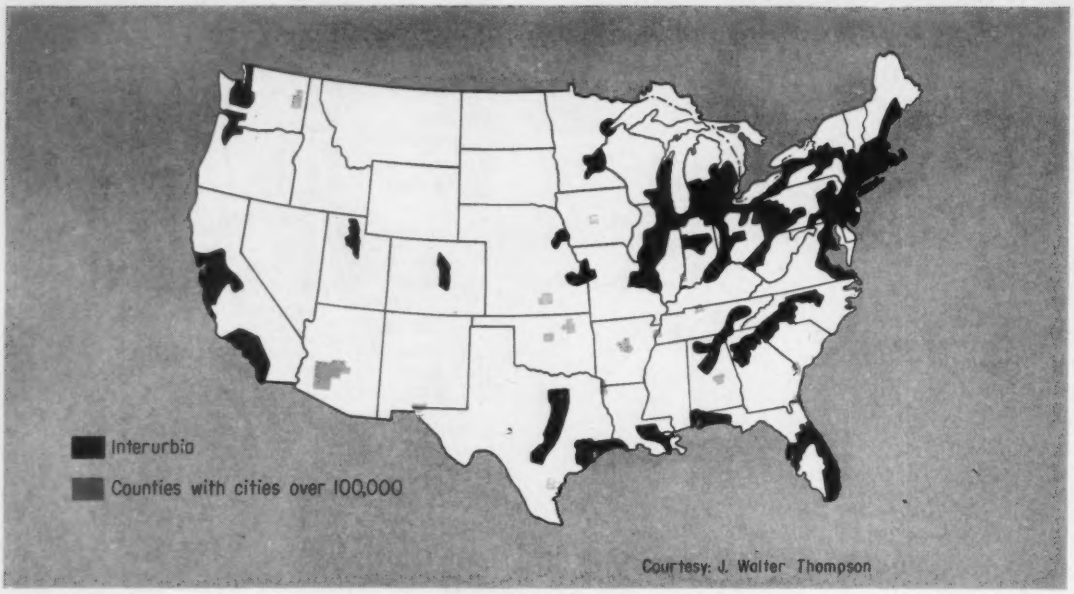
Only Tri-Clover "Lift-Type" plug valves have a handle and locking pin assembly with exclusive "cam-action" . . . providing a simple, positive lifting and "cracking" action on the plug, by working against a spring steel plate below the valve body.

S-358

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

TRI-CLOVER

In Canada: Brantford, Ontario
Export Dept.: 8 So. Michigan, Chicago 3, USA Cable: TRICLO



ECONOMIC LANDSCAPE: Each of country's 14 interurbias have two or more adjacent metropolitan areas with either two cities of 100,000 or more, or one city of 100,000 and three cities of 25,000 or more. Today, these strips hold a little less than half the population, slightly more than 50% of retail sales. By '75, they'll have 60% of population, 70% of sales.

FE Industry Analysis:

Interurbia—Brand-Battle Salient

Surge to integrated suburban areas offers manufacturers a potent counter to private-label threat . . . But they first need (1) ad parity with chains through elimination of national-local rate spread, plus (2) localized media for snuffing out brand 'brush-fires'

TO FOOD MARKETERS it's crystal clear that, for some time to come, chain organizations will wield the dominant power at retail level.

For the dramatic changes accompanying the chains' swift rise to power are reshaping the industry's economic structure and historical distribution-marketing pattern.

Aware of their command of the retail field, power concentrates are building a new marketing environment that casts manufactures' brands into smaller roles. Evolving is a new supermaket image–fostering a consumer psychology that shifts emphasis from known brands to the supermarkets' private labels.

Caught up in this new complex of competitive forces, manufacturers must contend with a new set of marketing problems.

That's because of the fundamental changes taking place, ranging from new buying procedures through the entire field of merchandising. And manufacturers must conduct their strategies with less maneuverability because of chain control of shelf space. Moreover, the retail giants are so engrossed in their own competitive battles with one another that they have little interest in wars between known brands.

The one big thing that hasn't changed is the fact that consumer demand still decides what brands get on store shelves.

Food firm managements, especially those making marketing decisions, should never lose sight of this fundamental. While the distributors (chains) loom large in any program, the consumers are still the ultimate buyers and the ones on which the main effort should be targeted.

Just how to bring the consumer "on target" is probably the most critical marketing problem manufacturers face today. Especially so since the chains, of all industry factors, are most intimately associated with consumers.

Because sales must be made where customers are, manufacturers are gearing selling plans to where tomorrow's population concentrations will be located. A significant aid to such long-range planning is J. Walter Thompson's "Interurbia" concept–which sees "strips" of population leapfrogging the traditional city or metropolitan boundaries.

According to JWT, by 1975 there

will be 14 such strips (see map) dominating the country's economic life. And these interurbias will account for 60% of the population . . . 70% of the retail sales.

For food manufacturers, the migration to interurbia poses these significant implications:

▶1. Marketing will be more selective as purchasing habits get more sophisticated.

▶2. Selling plans will be slanted to "market", rather than "geographical," objectives.

▶3. Location of plants, warehouses, and branch offices will be influenced by changes in an area's labor pool, and sales organizations will be devoted more to service functions.

▶4. Advertising media will have to conform their coverage to rearranged population groupings.

And you can expect the overall trend to centralized power at retail level to continue as chains concentrate their bigger outlets in these Interurbias. Furthermore, corporate competition between food chains promises to spur promotion of private labels as well as the new consumer-oriented supermarket image.

Companies with national and regional distribution already are focusing more attention on these particularized markets. Their common problem is the flare-up of local 'brush-fires,' which usually follow dislocations created by large retailers. These will continue, even increase in frequency, as chains shift their merchandising emphasis to fit various situations in each market.

This new environment, perforce, obsoletes many traditional marketing methods and techniques. Imperative, therefore, is more scientific research; more creativity, ingenuity, and imagination in developing marketing programs; and, especially, a brand new approach to media selection–which is so vital to the effectiveness of brand advertising.

Basis for Study

What's called for here is a realistic appraisal of local advertising. For it is in this key area that big retailers have a significant advantage over food manufacturers–namely, the local (low) space diagonal time rate they receive for all media, compared to the national (higher) rate the manufacturer is forced to pay.

This discrepancy has led to the abuses associated with co-op advertising. Also, the "spread" between the two rates often finances advertising for PLs.

And More to Come

Last month's revealing article–"Power Play at Retail Level"–sharply spotlighted the marketing crisis confronting food manufacturers today, detailed the challenging factors behind the rise of private labels.

Here is the first of a 'straight-talk' sequel-series examining what food firms can do to offset the threat to their marketing freedom. Particularly discussed is the opportunity for more effective advertising inherent in population trends.

And upcoming is an article giving working details on other ways by which alert firms may improve their positions in today's pressing power complex.—*The Editors*

There seems to be some confusion as to how an advertiser qualifies for a local rate. Especially now that large retail distributors, despite their plunge into manufacturing, still get a local rate.

Apparently, media have yet to perceive that they are walking into an economic booby-trap similar to that already snapped shut on some food manufacturers. For, if PLs eventually take over a large share of the market, media may be left 'holding the bag' wherein local (low) rate advertisers replace the national (high) rate marketers.

This, alone, points to interesting regional marketing in which local media may be the key. While national-scale marketing will doubtless continue, the changing environment and the promotion of retailers' PLs forces marketers to focus more attention on local media to cover particularized markets.

But here they face at least two formidable road blocks. For one thing, if a metropolitan newspaper's advertising effectiveness weakens as it fans out over the market area into surrounding Interurbia, costs can become uneconomic. Also, even though suburbanites may rely on their local papers for gocery store ads, the cost of space at national rates in all the dailies of the small towns (as required for complete coverage) becomes prohibitive.

But How?

In view of this, what's needed now is a realistic revision by media of the familiar rate structures and classifications–or even the development of a new advertising medium.

A noticeable transition in printed media has already occurred. National magazines are now offering advertising space in selected portions of their circulation.

Other publications (e.g. *Sunset Magazine*) have made similar offers for some time. Some large metropolitan dailies have carved up their circulation and now offer sectional space buys.

Helpful though these steps may be to advertisers with particularized distribution problems, they do not answer the growing competitive problem at retail level.

There are a number of supplements, published and distributed by national firms, which are stuffed into newspapers. Some of these sell regional space.

Lose Out on Big Ones

However, because they are usually distributed in Saturday and Sunday issues, they miss the big weekly food issues. Also, since these supplements are used as a circulation incentive, and are distributed only by non-competitive papers, their market coverage usually is not complete.

Food manufacturers must have a new, economic means to compete at the retail level. This applies to companies of all sizes–local, regional, and national marketers.

To achieve a parity of advertising effectiveness at local level with big retailers, manufacturers need a newspaper-distributed medium with space rates closely competitive to local rates, published expressly for each particularized market.

Other media–such as TV and radio–might find it profitable to study this market transition. For example, a package deal in which several stations band together to offer a group rate could inject new life into radio's economics.

Of course, not all consumers live in the Interurbia areas. That's why national advertising will continue to be used for overall coverage.

Yet, significantly, these Interurbias are the growing markets that will account for about 70% sales volume within a few years. As these markets become more clearly defined, the battle lines of brands and PLs will be established within them.

And the competitor with the most modern, efficient, and economic marketing weapons will have a significant advantage. —*FE Staff*

For free reprint of this article, write O-1 on Reader Service Card, back of issue

MOST RECIPES are developed by Mrs. Clark from family source after repeated lab tests. Recent 3-mos. European tour gave her ideas for broad line of specialty loaves patterned after Irish, English, German, Italian, and French favorites.

Home-Style Quality Rockets

Housewife-turned-baker antes $86 profit into better than $3-million-volume . . . Her secret: Old-fashioned flavor, and shrewd use of modest marketing budget

SO YOU THINK large-scale production of home-made breads with that good wheat flavor won't work. Catherine Clark, president of Brownberry Ovens, Oconomowoc, Wis., makes a strong case that it pays—and backs it up with profit-packed proof.

In 1946, with two co-workers, she started marketing a flavorsome home-made bread that didn't (she says) "have the cotton-batting texture of commercial loaves." Profits that year were a puny $86.

But last year, sales zoomed to over $3 million. And Brownberry is fast aiming for a national market through franchises and mail orders.

True, the prexy's idea of commercially baking real, substantial home-made bread wasn't original. But she parlayed it into a rosy profit payoff with shrewd small-budget marketing that made each dollar do double duty.

Like all successful marketers, Brownberry starts with a quality product. In Mrs. Clark's case, it utilizes coarse-ground whole-wheat meal, milled in the bakery the same day it is prepared by the straight-dough method into bread. Method of grinding is of greatest importance, not only for granulation but also for releasing the wheat germ intact for top-notch flavor appeal.

At first, expansion beyond local sales was pushed by rail and express shipment to small specialty grocers and country-wide mail orders (that now account for 5% of sales). The first break into the big-time came when a large midwest grocery chain placed orders for the Brownberry bread.

Soon, mushrooming orders from this and other chains forced the need for plant expansion.

In '53, a new 20,000 sq. ft. bakery was erected, followed in rapid succession by three 10,000 sq. ft. additions. Future plans call for another 20,000 sq. ft. of warehouse space.

During this growth, Mrs. Clark increased her staff to 180, usually working three shifts, to produce 50,000 baked goods items a day. She also expanded into 13 other types of baked products—5 breads, 5 types of biscuits and rolls, and 3 specialty items.

Breads, in addition to original Brownberry loaf, include enriched white (made with unbleached flour and wheat germ), cinnamon-raisin, rye (utilizing fresh ground rye flour and caraway), and oatmeal type. Second group comprises brown'n serve biscuits, butter twist dinner rolls, cinnamon and sandwich buns. Specialty products consist of sage and onion stuffing, bread pudding, and casserole crumbs.

Operates Three Franchises

Territorial expansion is being spread through selling manufacturing rights in other parts of the country to carefully selected bakers. Company would prefer to establish branch plants of its own in a few key locations, but is prevented by limited capital. Other stumbling blocks: Restrictions on profits imposed by excess profits tax, and need to expand the home bakery.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

WOMAN'S TOUCH gives Brownberry plant unconventional, but pleasant, look. Colonial-style structure, beautiful landscaping, and colorful awnings make bakery a welcome neighbor in residential community. Architecture also encourages family atmosphere among employees and makes favorable impression on plant visitors.

QUALITY IS STRESSED when it comes to packaging materials, too. Firm's line includes: Bread wrappers that are polyethylene-extruded on inside and wax-coated on outside for longer flavor life, foil-laminated paperboard trays for consumer re-heating to provide oven freshness, polymer-coated cellophane bags, and shaker-type wax-coated cartons.

Small Firm Into Big-Time

Rather than ship to distant locations—even though goods hold up well—company figures that franchises are the best way to supply freshly baked goods. Licensing is based on the extent and size of the potential market as well as quality reputation and personal integrity of franchise holder.

At present, 3 franchise operations in Cleveland, Davenport, and Costa Mesa (Calif.) amount to about one-tenth of the home plant's output. Company doesn't want too many such set-ups, but is investigating a New York area possibility. Sales are maintained in 20 states.

Since the firm insists that top-flight methods match premium product quality, Catherine Clark spends much time setting up new Brownberry Ovens—giving personal assistance in equipment selection, laying out facilities, and teaching baking techniques. What's more, franchise holders spend considerable preliminary time in the home plant—learning formulas, production techniques, and marketing methods.

Promoting Products

Advertising for the first 5 yr. had to operate on a lean budget. To promote its products, company store-sampled special packages of bread slices.

At these store demonstrations trained demonstrators, gingham dress-attired in the costume of firm's trademark girl, offer freshly buttered toast to customers. Same method is employed, with good success, at food shows, fairs, and grocers' meets.

Initial sample-distribution technique was supplemented by effective door-to-door selling. Mrs. Clark and her club members blanketed Oconomowoc and the better sections of Milwaukee and Madison, giving their sales pitch and passing out individually wrapped slices.

During the early fifties, after sales began to build up, company bought a little radio and TV time, also took a fling at colored rotogravure in the "Sunday Milwaukee Journal." But, feeling that the money, at this stage, could be put to better use, company continued to rely primarily on sampling, plus word-of-mouth customer reaction.

Now that it has a more comfortable sales cushion, Brownberry is reconsidering advertising possibilities. Radio, Mrs. Clark believes, shows promise, but TV is too costly for a top-level program. This year's plans call for a $100,000 advertising promotion budget, some of which will go into two radio programs in the Chicago area.

Distribution Facilities

Broader marketing continually occupies management's thoughts.

Distribution from home plant is within a 300-mile radius and, according to Sales Manager Merrill Taft, will be extended another 100 miles after arrangements are made to bulk-ship goods to St. Louis.

Right now, semi-trailers leave the bakery daily for drop-off points in Chicago and the Twin Cities. About half of production is rail-distributed throughout the Midwest.

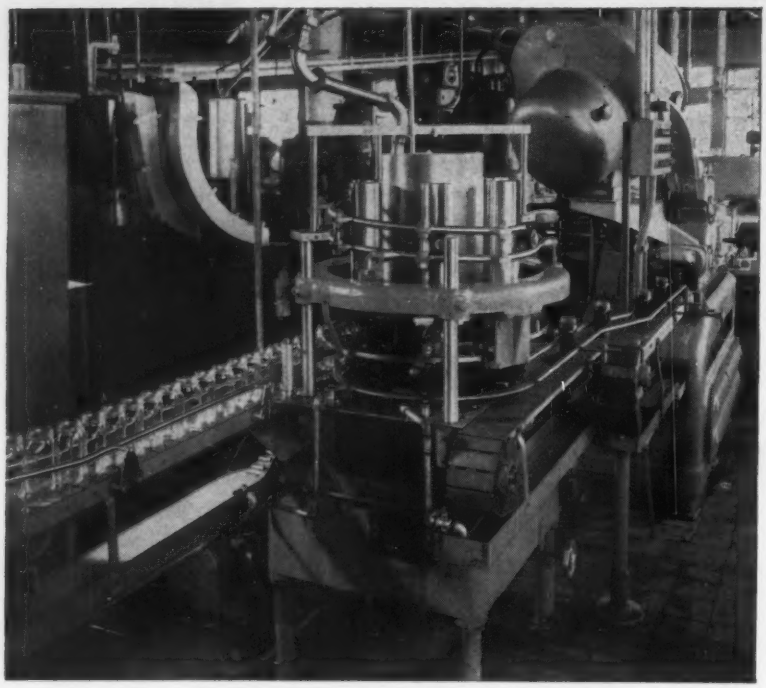
Handling company's baked goods are 20 distributors out of Chicago and three in the Twin Cities. Remaining wholesalers deliver throughout the Milwaukee and other principal Wisconsin areas.

Distributors, carefully selected, are on the young side—most are not over 35. Taft chooses those interested in owning their business, with the majority having previous in-store experience as manager or assistant managers. When business expands beyond a certain point in an assigned territory, Taft recommends that the wholesaler sell off part of it.

Before each territory is set up, it

FLUIDICS

is a new PFAUDLER PERMUTIT program that provides a modern, imaginative approach for handling and processing more profitably the liquids and gases involved in: blending, evaporation, distillation, drying, filling, heat transfer, storing, centrifuging, agitation, water and waste treatment, corrosioneering, and metering.



FLUIDICS AT WORK

How to fill even viscous hot fudge with speed and accuracy

If you have problems filling viscous products accurately without losing speed, consider the experience of the Robert A. Johnston Company with their six-station Pfaudler rotary piston filler.

Mr. A. O. Meyer, Plant Manager, says, "The Pfaudler filler has been giving us some very good results. We fill approximately 55 six- or eight-ounce jars per minute with heavy hot fudge without a spill. And we also package caramel, butterscotch and chocolate syrup.

"The filler takes only about a half hour to clean thoroughly. We've had very little maintenance with it. In fact, all it really needs is a routine cleaning and lubrication."

The RP-6 filler is the smallest in the Pfaudler line . . . an ideal model for filling small lots of a number of products. Change-over for various container heights takes only about 12 minutes. Other models of the rotary piston filler will handle up to 1050 cans a minute. All these fillers are rated to ±0.1 fluid ounce accuracy.

If you'd like the full story on the complete line, write to our Pfaudler Division, Dept. FE-99, Rochester 3, N. Y.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

is thoroughly combed. Taft does the initial contacting of chain stores and lets distributors follow up by opening individual store accounts.

Package Improvements

When the company began to distribute through supers and chains, packages had to be overhauled. Previously, containers were effective for independent stores where they often got good display on the counter next to the cash register.

But company had to redesign them to meet the growing trend toward point-of-sale merchandising in self-service stores. The conservative design and retiring color scheme made packages almost invisible when they competed with competitive impulse-sale products in bread racks.

There was another problem: How to quickly identify wheat from white breads. This was solved by using brown wrappers for wheat and white for white breads.

First redesign attempt—carried out by company personnel to save the cost of a professional package designer—proved a flop. Changed bread wrappers were not only low in appeal, but made some customers actually believe new ownership had taken over.

Called in at this point was a top-flight package designer, Ernest Spuehler, who created eye-catching bread wrappers of the home-looking type. After this, sales zoomed.

Special Ingredients, Methods

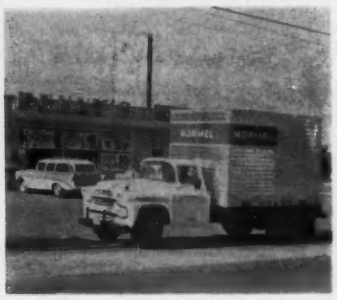
When it comes to ingredients, there's no penny-pinching. Only kitchen-quality items—in adequate amounts—like freshly broken eggs, 93-score butter (churned within 2 hours from a local creamery), unbleached flour, wheat germ, high-protein wheat, and steel-cut and imported Irish oats, go into products.

Compared with some bakeries, operations may appear somewhat unorthodox, but they're primarily employed for quality-promoting reasons.

For example, loaves are baked about twice as long as normally to give that full-of-flavor crust. Steel-cut oats are steam-cooked and paddle-stirred for about an hour before going into doughs for oat breads.

Butter twist rolls are prepared from doughs that are knotted by hand. Raisins are dumped from cases onto illuminated glass-inspection plates to insure freedom from possible contamination. And cinnamon is rolled in, before the dough is formed into loaves. —*End*

AT PLANT meat is loaded into three reefers (each holding 5 tons). These lock on flatbed trailer towed by diesel.



AT MARKET, delivery is made from same reefers, after they have been fork-lifted from diesel unit at depot.

Plant-to-Market Speedup

All-important savings in hours and dollars won with packer's new completely containerized deliveries

NON-STOP from packing house to supermarket—that's the time- and money-saving result of George A. Hormel Co.'s new "thermo-sealed" meat delivery system.

"Our products arrive at the customer's store exactly as they left our packing house," says E. W. Flitton, Hormel general transportation manager. He further describes the system as "another significant step in a series of developments all designed to bring meat to the consumer's table in a more appetizing manner."

Key to the operation is a custom-designed reefer container which holds 5 tons of meat.

Three of these units, each measuring 11¼x8x7.8 ft., are packed with meat at the Hormel headquarters in Austin, Minn., in the evening. Loading is according to the route and customer on a "last-in, first-out" basis. The three reefers then go on a 40-ft. aluminum flatbed trailer towed by a GMC 860 diesel tractor.

Containers are secured to trailer by patented Clark-Brown Mobilocks that latch to a Mobilplank anchor mechanism. The lock is actuated by the fork-lift truck doing the loading. When fork is inserted in side openings in reefer, Mobilocks remain open. Then they lock when fork is withdrawn.

Trailer leaves Austin about 3:30 A.M. and arrives in Hormel's Twin Cities branch about 7 A.M. There it is met by three of the city delivery trucks. A fork-lift immediately loads a reefer on each of the smaller trucks, and inside 20 min. the trucks are on their way. The empty reefers are returned to Austin carrying various supplies.

The containers are insulated to help maintain a constant 35-36F. when loaded. Walls and ends have 4 in. of Ultralite, while ceiling has 5 in. Floor is insulated with 4 in. of Styrofoam running up each side wall for 15 in.

Floors are of extruded aluminum, with a drain trough running across rear end. Floor level is 1¼ in. above door level so that when containers are washed, water runs back through trough and out back door.

Refrigeration is supplied by one Foster-Built dry ice bunker with 200-lb. capacity. A blower fan cools the meat. A stainless steel rail runs along the side of each reefer and is used to hang carcass meat. A dome light and a thermometer are included.

Reefers have slide-out aluminum treadplates. Some also have hinged "roofs" which can be raised to protect loaders and unloaders during bad weather.

Each is wired for a 12v. system and a 110v. standby system, including I.C.C. clearance lights. Current is supplied by three steel contact pads, rather than by wires, which would have to be connected and which could break. The pads connect with a matching set of three contact fingers on the chassis. Circuit is energized when container drops on chassis.

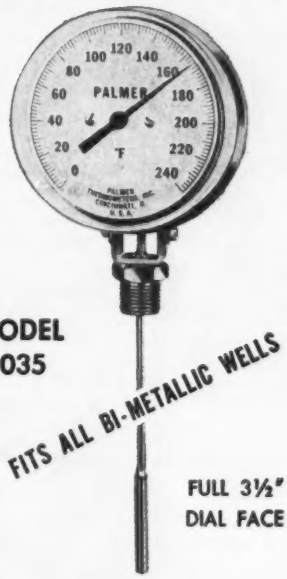
Units are made by Clark Equipment Co., and leased by North American Car Corp. for use by Hormel.

—*End*

Outstanding Accuracy

PALMER

Dial Thermometer



Check these functional features

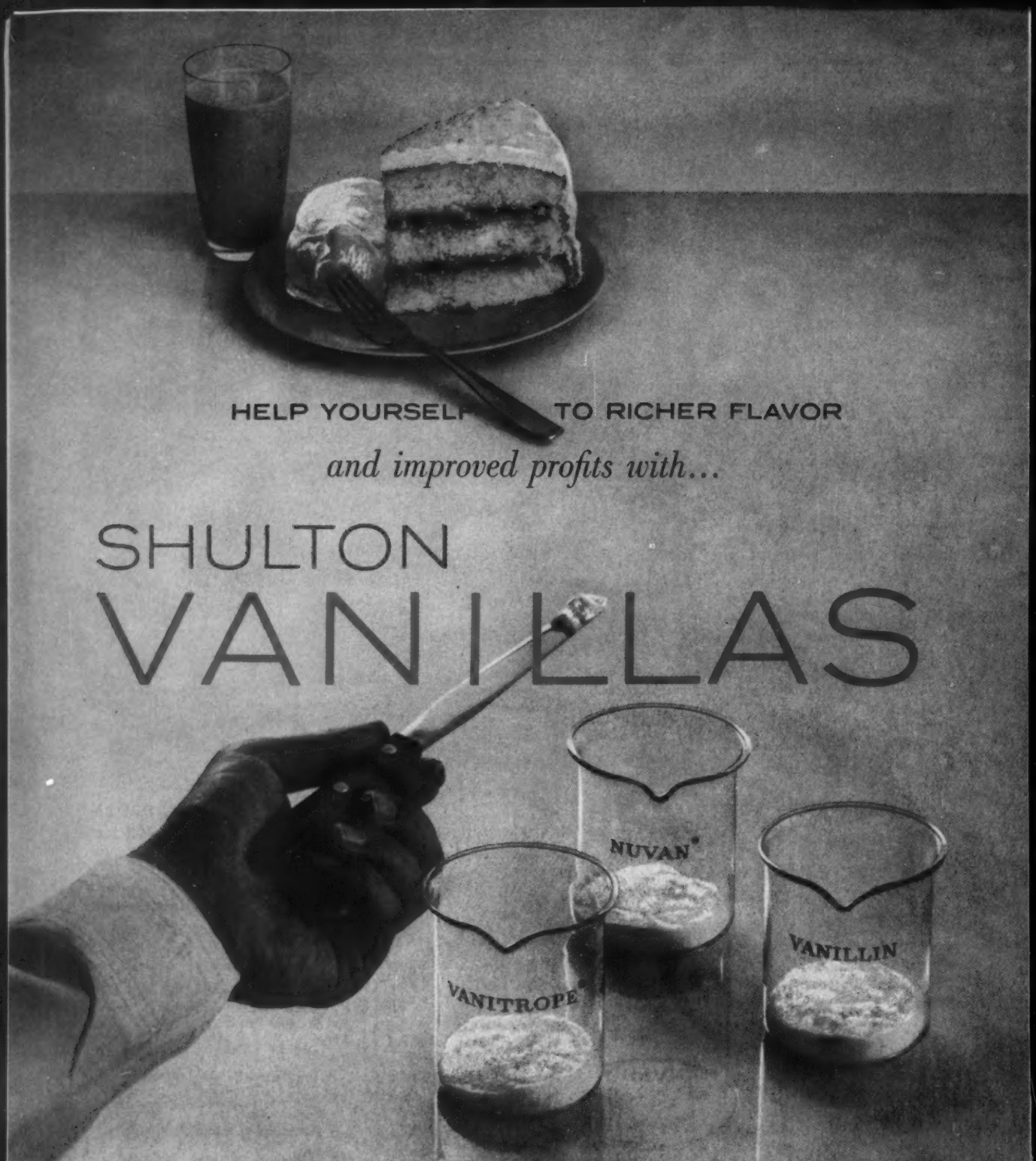
- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER

THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

2515 Norwood Ave., Cincinnati 12, O.



Imagine the classic flavor of the cured vanilla bean...and you have defined Shulton's true-to-nature vanillas. Shulton's VANILLIN USP is a standard for quality and blendability. VANITROPE® (up to 25 times stronger than Vanillin) also enhances flavors, gives you greatest economy. Now available are versatile NUVANs®... blends of Vanillin and Vanitrope...so adaptable for quality vanilla effects, and even more economical than Vanillin. Whether it's chocolate—cookies—ice cream—cakes...you can make it better with Shulton vanillas. And save up to 50% or more in flavoring costs. Why not write for information and samples today?

SHULTON FINE CHEMICALS Division of Shulton, Inc. • 630 Fifth Ave., New York 20, N.Y. • Circle 5-6263

Making good products better—through research

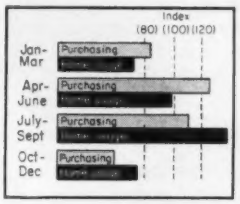
Making Promotions More Effective

MARKETING CASE HISTORY OF MONTH | From files of *National Menu Census of Market Research Corp. of America* . . . Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors*

Management's problem

OUR PRODUCT is used as a component in a popular summer dish. Sales reach a peak with the approach of hot weather, and we naturally concentrate our promotions on this season.

Our problem: How can we make our marketing tactics more effective?



WHAT WOULD YOU DO?

Management's decision

To complement the information we receive on consumers' *buying patterns*, we sought out pertinent facts on their *eating habits*.

The data we wanted were found in the National Menu Census, a year-long study of food preparation and consumption in American homes conducted by MRCA. This tabulation reveals what happens to every food product brought into the home, including the manner in which it is used as an ingredient or additive in meal preparation.

The questions we submitted to the Menu Census were designed to divulge both *when* and *how* our product was actually consumed.

Result of Action

Much to our surprise, we learned that there was a considerable time lag between the purchase of our product and its use in the home (see chart). Previously, we had thought that the top consumption period was much closer to the weeks of greatest sales activity.

Less astonishing, but highly interesting, was information on the various ways in which our product was served by different types of families.

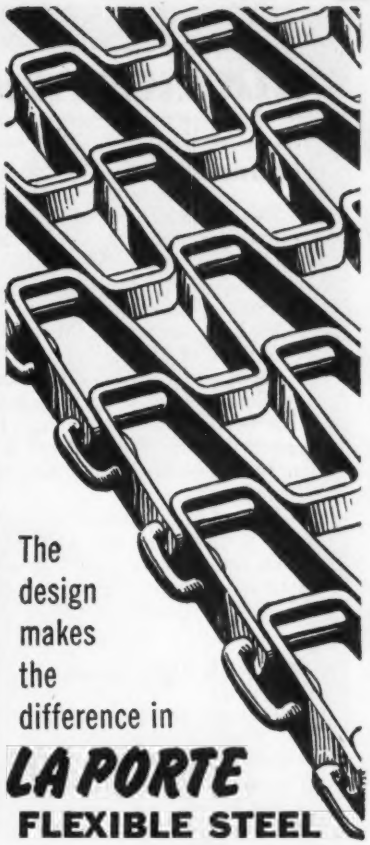
As a result of the findings, we made significant changes in the timing and nature of our promotions. In place of one overall campaign, we adopted a two-phase program.

The first stage, timed to coincide with the sales pinnacle, concentrated on moving goods off the shelves by means of special trade and consumer merchandising devices.

Later, at a time we discovered to be the highest consumption period, we switched our emphasis to product usage. Here, we stressed both the unique and most popular applications of our product, according to Menu Census findings.

Our promotional "message" thus reflected the consumers' dominant interest at each point in time. We believe that the swingover to use-oriented themes in the second stage helps to spur consumption and cause people to reenter the market more rapidly.

* For more information, write to FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.



The design makes the difference in

LA PORTE FLEXIBLE STEEL CONVEYOR BELTS

THE open-mesh arrangement of La Porte Conveyor Belts offers food manufacturers definite advantages. For example, operating on the La Porte sprocket, they maintain a positive drive assuring smooth, continuous travel. They are easily sterilized while in motion by one man with a steam gun. When used on washers, they assure fast drainage. On cookers, dehydraters and freezers, the open-mesh feature combines with the rapid temperature transfer of the galvanized steel to facilitate each process. In addition, La Porte Belts provide a perfectly flat surface for containers, empty or filled. Products in process can not roll off.

Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon below for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

ADDRESS_____

CITY_____ STATE_____

MARKETING SIGNALS

Thorns in Those Rosy Profits

Sharp cost increases took some of the bloom off the improved earnings shown by food and beverage firms for the first half of '59. An FE check of corporate reports shows that selling, administrative, and general expenses concurrently shot up 8%—topping the 6% profit hike credited to this industry by First National City Bank of New York.

Labor costs accounted for about half of the increase. While the industry gets along with a smaller production workforce than a year ago, fatter weekly paychecks upped the overall payroll bill 4.5%. And the uptrend in the number of non-production employees boosted payrolls, too.

Intensified merchandising and heavy ad support for new products are also fingered as significant factors. Some firms put the blame on special situations—such as start-up expenses for new plants, and non-recurring charges for shuttering branch sites.

PLs Pick Up Steam

Two new developments indicate there's no let-up in the trend to private labels. In Chicago, National Tea began manufacturing cookies right on store premises. Output of the cookie-making line is said to be around 4,000 lb./wk., and profit margin up around 50%—a hard figure for brand manufacturers to match.

A pet theory among national-brand supporters—that heavily advertised, low-profit items such as canned soups are immune to retailers labels—got a rude jolt when A&P trotted out its own brand of tomato soup. The chain's 3/32¢ offering on 10½-oz. cans was matched by Heinz and Campbell with 4/45¢ specials. But the chain scored a beat by unveiling a family-size (30-oz.) line.

A Peek Behind the Media Curtain

Prodded by stockholders who wonder where the money went, food firms are beginning to divulge their ad expenditures. Interestingly, the budgets disclose no fixed share-of-sales formula, as the following figures show: General Foods, $96 million (9.1% of sales); General Mills, $33M (6%); Nabisco, $21¼M (5.2%); and Corn Products, $21M (4.4%).

Join Hands for Future Growth

A record (79-million gal.) pack, dwindling share of consumers, and inroads by competitive drinks—all have forced Florida's concentrators of frozen orange juice to make common cause in a special $3.3-million promotion running Sept.-Nov. Aimed primarily to tap new users, as well as stimulate consumption rate of present buyers, the promotion will blanket the country with 253 million coupons (12¢ & 20¢ rebates)—more than one for every person in the USA.

Although output reached a new high this season, consumer usage isn't keeping pace. For the first 8 mos. of the current marketing year, share-of-families buying frozen orange juice dropped to 24.9%, vs. 28.7% two years ago. During the same period, rate of users of pineapple-grapefruit drink more than doubled (from 3.4% to 8.8%).

Concentrators feel that now is a good time to win new users because of the "vintage" quality of this year's pack. And with even bigger packs in the offing—one source estimates '69-'70 output at 114 million gal.—there's urgent need to start building future sales.

Mixed Pattern for Food Store Sales

Per-capita sales of retail food stores increased 3.1% in '58, Census Bureau reports. That's not an overly impressive showing when you consider that the retail food price index advanced 4% last year.

Not all sectors fared alike. Topping the national average were outlets in the Northeast (up a sharp 7.3%) and North Central (up 5.1%). Trailing were stores in the South (up 1.2%) and West (down 3.1%).

Areawise, Northeast was first with $338 in per-capita retail sales. Next in order were the West ($334), North Central ($288), and South ($242).

Two More Join 'Marketing Concept'

Latest food firms to reorganize internally for more effective marketing are Nestlé and Pet Milk. Nestlé, with new separate chocolate, coffee, and institutional marketing divisions, hopes each group will concentrate on fewer products in greater depth as well as provide better customer service. Pet Milk is aiming for far-ahead anticipation of consumer and trade needs as well as sharper market development for its diversified product line.

BRIEFS

Costs of introducing a new beer brand on a national scale today run $3½-4 million, estimates Pres. Bruce Berckmans, International Breweries.

Consumer "deals" cause temporary brand-switching but don't increase total market for food fats and oils, according to 2-yr. check of metropolitan Chicago families.

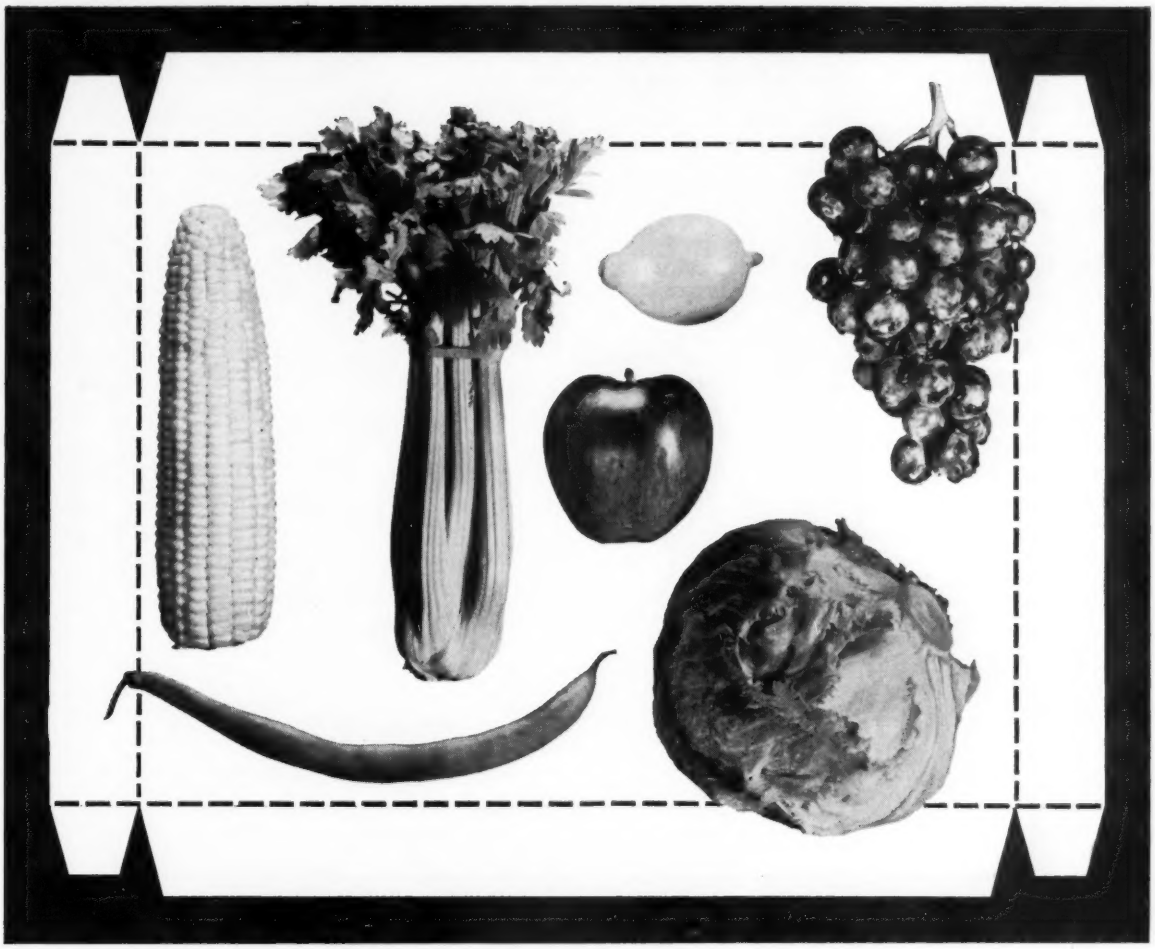
Need for better order-delivery schedules is shown by NCA's "Philadelphia Project" report, which indicates 3.2% of supermarket's canned goods are out-of-stock each day.

Gerber's first non-food item (baby pants) will be distributed by firm's own sales force, although such products are usually handled by rack jobbers.

Mileage payments to food industry salesmen average 8.93¢ (vs. 8.91¢ all-industries level), reports Wheels Inc., auto fleet leasing firm.

Public schools' food purchases totaled $597 million (wholesale value) in '57-58 academic year, reveals USDA. Expected 25% enrollment increase by '70 underscores market's future importance.

Spot-radio outlays by 16 heaviest food firm users aggregated $11,165,000 in first half of '58, says Radio Advertising Bureau. Brewers and bakers set the pace.



When Versatility is a Must

PRE-PACK WITH THE PACKAGE U-6

Produce, fresh fruit, meat, poultry—whatever you prepackage, the Model U-6 offers the widest size range and quickest adjustability.

A single handwheel adjusts for package length. Variations in height and width are automatically taken care of by the Self-Measuring Paper Feed. This exclusive feature automatically cuts off the correct amount of wrapping material for each item, insures a perfect wrap with a minimum of material. The Package U-6 has a speed of 20 to 40 packages a minute, uses trays, cartons and flat cards, and requires only one operator.

Whether you prepackage now or are planning a prepackaging operation, get the complete U-6 cost-cutting story from your nearest PACKAGE representative.

Check these ADVANCED U-6 Features

- Exclusive Self-Measuring Paper Feed
- Wraps 20 to 40 packages per minute
- Top Labeler • Widest Size Range
- Electric-Eye Registration (optional)

Adjustable for Following Sizes:

Length	*Width*	*Height*
4″ to 16″	2″ to 9½″	⅜″ to 5″

PACKAGING IS PART OF YOUR PROFIT PICTURE

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.

NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO • KANSAS CITY
DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO • MEXICO CITY

PACKAGE

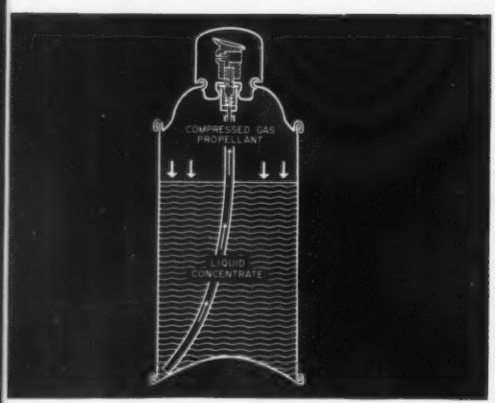
PMMI

CIRCLE 55 ON READER SERVICE CARD

CIRCLE 56 ON READER SERVICE CARD→

AIRCO INDUSTRIAL AND RARE GASES

ARGON
OXYGEN
ACETYLENE
NITROGEN
NITROUS OXIDE
HYDROGEN
CARBON DIOXIDE
HELIUM
XENON
KRYPTON
NEON



THE ANATOMY of a typical aerosol involves (1) a gastight steel, aluminum, clad-glass or plastic container; (2) a manually-operated valve, usually with a dip tube; and (3) a propellant under pressure to force the product up and through tube and valve.

PART OF THE PICTURE
at ATI as aerosol production soars—
AIRCO INDUSTRIAL GAS SERVICE

In the very near future, a billion aerosol units a year will be marching off the conveyor belts of custom and in-plant loaders. Well over 100 different products, under hundreds of brand names, are being dispensed by push button.

The most suitable and economical propellants for a substantial percentage of aerosols are the compressed gases—notably true for the host of pressurized foods and pharmaceuticals now under development.

Airco has been in the forefront of this booming business. With technical help, with supplies of high purity compressed gases—

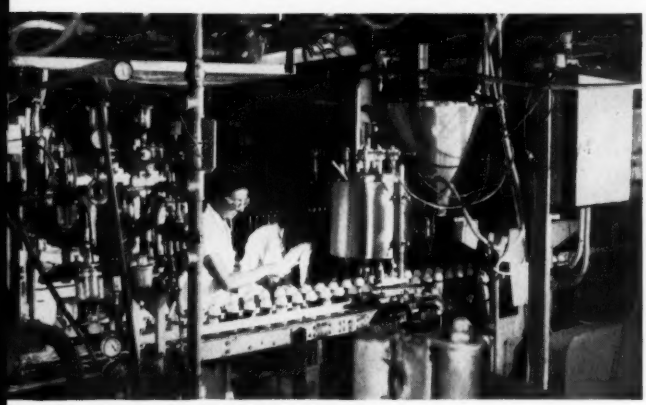
NITROUS OXIDE—CARBON DIOXIDE
and now
NITROGEN—ARGON

Airco also has pioneered the use of these gases in other areas of equal importance to—and often related to—packaging, blanketing, purging, quick freezing, chilling, hydrogenation, and carbonation.

If your plans include products in pressure packages—or product improvements of any kind where gases can serve—call in your nearby Airco Engineering Service Representative. Airco offers you unexcelled technical facilities for adapting your products to compressed gases, plus a source of supply widely known for its dependability.

AMONG THE BUSIEST of the custom loaders is Aerosol Techniques, Inc., at Bridgeport, Conn. Production processes, originally worked out with Airco, now enable ATI to handle up to 400,000 units a day. Here's how ATI cycles a compressed gas aerosol:

Prewashed cans travel on a magnetic conveyor like the one below. A six-spout filler charges cans with product. Operators insert the valves. Machine crimping comes next. Cans then move to the gassing heads.



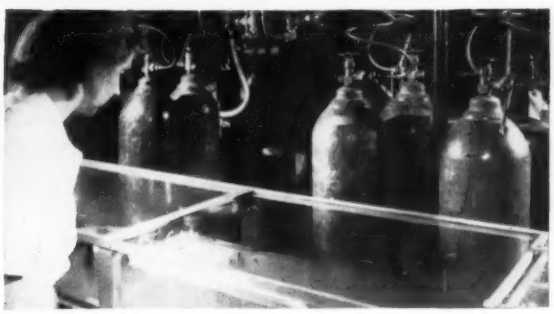
GASSING HEADS charge cans with Airco high purity nitrogen, down through valve and dip tube, to a pressure of 50-100 psig., depending upon formulation. This is the pressurized gas that ultimately dispenses the product.

Electronic equipment then checks units to make sure each is gas-tight and pressure-right. Cycle time, which often includes labeling: about two minutes.

RESEARCH AND DEVELOPMENT LABS of ATI, where Airco's long experience with industrial gases and gas equipment serves ATI in its enlarged program to develop new inhalation therapy aerosols, pressurized vitamins, antibiotics and other products.

THE NITROGEN INSTALLATION. Here, too, Airco is part of the picture. For Airco has tailored this installation to ATI needs, backed it up with stand-by cylinders and the Airco Dealer's nitrogen "bank" of more than 100 cylinders.

Why Airco? Because Airco is near at hand, supply is certain, and competent technical personnel is on call at all times.



AIRCO®

AIR REDUCTION SALES COMPANY

A Division of Air Reduction Company, Incorporated

150 East 42nd Street, New York 17, N. Y.

Offices and dealers in most principal cities • On the west coast—Air Reduction Pacific Company • Internationally—Airco Company International • In Cuba—Cuban Air Products Corporation • In Canada—Air Reduction Canada Limited • All divisions or subsidiaries of Air Reduction Company, Inc.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT • Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO**—industrial gases, welding and cutting equipment • **AIRCO CHEMICAL**—vinyl acetate monomer, vinyl stearate, methyl butynol, methyl pentynol, and other acetylenic chemicals • **PURECO**—carbon dioxide—gaseous, welding grade CO_2, liquid, solid ("DRY-ICE") • **OHIO**—medical gases and hospital equipment • **NATIONAL CARBIDE**—pipeline acetylene and calcium carbide • **COLTON**—polyvinyl acetate, alcohols, and other synthetic resins.

Why you get
MORE FOR YOUR MONEY
with Foxboro Instrumentation

The widespread preference of leading food processors for Foxboro Instruments is no accident. Behind all Foxboro products stand over 50 years of engineering integrity in creating instrumentation, not merely as mechanical devices, but primarily as the means *to make processes operate more efficiently*. You get the benefits of this experience in exclusive Foxboro Services that insure better *applications* of instruments, more dependable *performance* of your installation, and *upgrading* of your own process control men. Typical Foxboro extra-value Services:

Application Engineering — Before any application of a Foxboro Instrument or System is recommended, it has been exhaustively group-studied by Foxboro Engineers with specialized knowledge of specific industry requirements and characteristics of the process involved. Resulting Application Engineering Data is available on request.

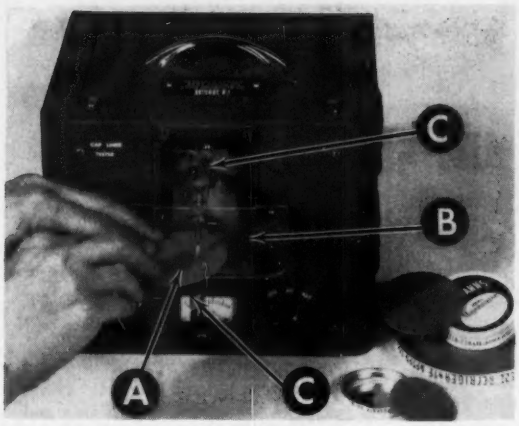
Scheduled Maintenance Service — For your protection against variations in production quality and process down-time, Foxboro makes available a Scheduled Service Agreement. Under this plan, a factory-trained Foxboro Technician calls at scheduled intervals to maintain your Foxboro Instrumentation at continuous peak efficiency.

Training Classes — For instrument men and engineers of Foxboro Instrument users, the Company offers intensive 3-week training courses in the use, mechanics, application and maintenance of instruments. Conducted by full-time staff, with lectures by engineering and research department specialists, in Training Center at Foxboro, Mass.

The Foxboro Company, 309 Neponset Ave., Foxboro, Mass., U.S.A.

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION for the Food Industry



CAP LINER (A) is rotated on Lucite platform (B) between electrodes (C). Blue arc penetrates liner at point of defect.

Individual Layer or Coating	Ave. Thickness (mils)	Resistance to Penetration
Wax	0.5	Poor
Varnish	0.5	Excellent
Varnish + Paper	6.5	Excellent
Paper	6.0	Fair
Laminant	0.5	Poor
Pulp	50.0	Poor
Complete Liner	57-58	Excellent

TESTS with wax-varnished paper-pulp inserts used for mayonnaise show relative protective strength of individual layers.

Finds Cap Liner Faults Quickly

Simple new tester developed by Best Foods uses electrical arc to "spot" defective inserts. Method is inexpensive

MAINTAINING a high standard of excellence in glassed products has been made easier by a simple method and inexpensive instrument that provides fast, reliable quality control of liners used in jar closures.

Developed by Best Foods, the cap liner tester detects faults capable of being demonstrated by a high potential (emf) across the fault area.

Quickly revealed are such typical defects as radial cracks, porous areas, and gaps in the continuity of the sealant element. This is important to know since the effectiveness of the seal between the exterior and interior of the jar depends on positive contact of the liner with the rim as well as the liner material's degree of porosity.

The instrument, which spots variations in dielectric strength, is simply a high voltage, low alternating current arc generator. Low voltage utility power, derived by means of transformer, is fed directly to the primary. The high voltage secondary is connected to the electrodes which establish the arc. All components except the batteries are mounted on the front panel of the 10x8x8-in. cabinet.

Electrode supports are 2½ in. apart on a 5x3-in. Lucite panel. The lower electrode passes through the platform via a small hole drilled in the platform. The spark gap (⅛-in. normally) is adjustable.

The D.C. ammeter functions for battery operation only and serves to indicate the condition of the batteries as well as the setting of the current limiting resistor.

How Liners are Tested

Prior to testing, liners are pried from the cap proper at the periphery with a spatula or dull knife (noting any damage due to prying). Where the liner fits the cap very tightly, a sharp-pointed knife can be used to cut the liner in half. The two halves are then readily removed.

After the instrument (either A. C. or battery operation) is turned on, the current control is adjusted to produce a blue arc across the electrodes. Excessive current produces an orange-red arc and is undesirable.

The liner (or one of the halves) is then placed either side up on the platform between the electrodes. In so doing, arcing should cease.

The entire area of the liner should be scanned by moving the liner slowly about between the electrodes. If any region of porosity (or of lower dielectric strength) is present, the arc will instantly resume in these areas.

A number of wax-varnished paper-pulp liners were "dissected" to confirm which layer or layers serve chiefly to protect the product in the jar: 1. From external contaminants such as mold and yeast spores, dust and odors. 2. From evaporation of surface moisture of the product which is generally accompanied by surface discoloration as well as crust formation (viz., mayonnaise).

After each coating or layer is removed, it was measured for average thickness as well as for resistance to penetration by the arc. Results showed that the varnish coated paper provided the intended protection (see table).

Removal of the varnish layer from the paper caused immediate penetration of the paper by the arc, but not in all areas. By coating a porous paper with wax layers of increasing thicknesses, it was found that an eight-fold thickness increase (ca. 8 mils) was needed to resist penetration by the arc. The pulp layer, being highly porous, contributed no protection against penetration.

—*End*

EDMUND L. JOSEFOWICZ

Best Foods Div. of Corn Products Co., Bayonne, N. J.

For free reprint of this article, write O-2 on Reader Service Card, back of issue

ENHANCING effective cabinet display is vertical and horizontal arrangement of copy and artwork on front and back of "booklet"-type package.

Here's the Pay-off

Armour's new packaging concept has already brought in its first winner—an exclusive bacon package that scores a beat on the competition. The result of close coordination between the meat packer and his suppliers, the new container is designed to assure the consumer fresh-from-smokehouse flavor from first bacon slice to last.

The 1-lb. pack, similar to a single-fold booklet, is perforated to permit one or more of four sections to be torn off and used as needed without re-wrapping the remaining portions. Each section holds around 8 slices of bacon, is individually sealed.

Package construction is two laminated sheets. Outer sheet, which bears package design, is comprised of foil, kraft paper, and foil that is extrusion laminated with polyethylene (which is adjacent to the bacon). Transparent inner sheet, which lets consumer see the product, consists of cellophane laminated with poly on product side and Saran-coated on reverse side.

Packing speeds at present are about 30/min. Uniform bellies (high lean meat) are selected and fed to slicer that cuts eight bacon strips at a time.

After grouped slices are check-weighed they proceed to Roto-Wrap unit between two roll-fed sheets. Nitrogen gas goes into package, and vacuum is drawn as sheets are heat-sealed into four separate ¼-lb. units to make 1-lb. pack.

Because of the leaner meat and extra packaging materials used, the product carries a premium price. The new pack is retailing for 79¢ (Minneapolis-St. Paul test market) vs. 69¢ for the conventional cello-wrapped tray board.

Radical New Packaging Approach

Armour groups packaging activities under purchasing department—to take advantage of suppliers' know-how . . . Results: Sharper coordination, speedier attainment of goals

"TOTAL PACKAGING"—that's a concept you'll hear more and more of. For the challenge here is to organize effectively to keep up with fast-moving improvements in containers and equipment, pull related corporate activities together, and harmonize operating costs with packaging convenience and consumer appeal.

A look at the why and how of Armour's packaging reorganization is instructive because this new setup was brought about by, and aims to solve, many of the problems you and others are wrestling with today.

What clinched Armour's decision for top-side revitalization was the fact its decentralized, 3-pronged packaging activities didn't fit into President W. W. Prince's plan-ahead program.

Trouble was that packaging responsibilities were spread around too many divisions. Package engineers reported to production, label designers to advertising and sales promotion, and package researchers to food research.

Lacking was a strong centralized organization—at the top-executive level—of packaging operations. As a result, packaging effectiveness was often stymied by three roadblocks.

For one thing, any person seeking to leave the status of a new package development would have to check through three sources. Also, once one group finished its share of a project, others weren't always zeroed in.

Second, progress was hampered by an over-conservative approach to new developments in packaging materials and machines. Hurting here was a wait-and-see attitude that let others get a head start by working out the bugs in new packaging developments.

In the third trouble area, suppliers had difficulty getting their messages through to the three packaging groups. Same thing—but in reverse—with the packaging staff.

Armour knew it had the combined technical know-how and creative ability of men serving the three main areas of package development. What was needed was closer management control to put over a total packaging concept.

Thus, the company decided on a two-level attack that (1) Consolidates all related activities (engineering, label design, and research) into a new package development and design department; (2) works with suppliers to get 6- to 12-months' jump over competition.

Headed by C. D. Schoby (with Carl Wolf assisting), new department is under the supervision of C. V. Short, purchasing division's general manager.

The meat packer expects this consolidation-cooperation effort to pay off handsomely by:

. . . Letting a top executive shoulder the prime responsibilities of the more important packaging functions.

. . . Funneling information more

efficiently between suppliers and packaging team.

. . . Getting speedier, more adequate research–some from suppliers –into package development.

. . . Looking into all areas to improve packaging and, at the same time, curtail the high cost of packaging.

. . . Working more closely with other departments–like sales and advertising–on their ideas for new package changes or improvements.

You might ask, "How come the purchasing department heads up a package program?"

Here's how Short explains: "No department is better equipped to learn of packaging innovations than purchasing. So it's reasonable that constantly changing packaging should report to purchasing.

"It's easier for suppliers to get their messages over with one instead of three packaging groups. What's more, purchasing's control over mass buying permits it to tap suppliers' research and development departments.

"We indirectly pay for their activities. So why not take advantage of their vast research resources, especially when one of our suppliers has 60 package designers and another 75? And others have crews of specialists in packaging development, equipment, and market evaluation, as well as research scientists and food technologists.

"When we want to change a carton size, we enlist the aid of our carton supplier. When we have a package-evaluation problem, we seek the help of our supplier's paper-film testing facilities.

"Purchasing makes national contracts–available to plants–for major supplies. Some purchasing is decentralized, because we don't want to sacrifice the advantage of our nationwide, centralized mass-buying power."

Armour is more than ever impressed with the tremendous range of packaging knowledge required to keep abreast of progress. This is shown by the company's shifting a greater part of production from fresh into processed packaged meats.

Armour expects the new program to bring in bigger dividends in the years ahead, when there'll be more pressure on the production side of packaging for lower operating costs. This setup also fits in nicely with the packer's constant search for new profitable items, because it strengthens ties with the newly-formed processed meats, grocery products, new products, and marketing services divisions.—*FE Staff*

CANNERS AND CAN MAKERS

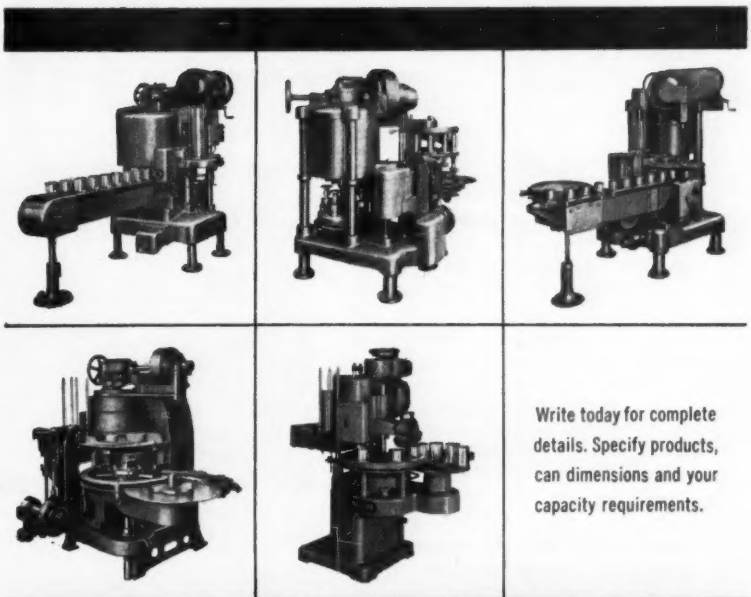
THE WORLD OVER

ARE SWINGING TO

ANGELUS

CAN CLOSING MACHINES

Through simplified design, ease of operation, ruggedness, and a wide range of accessories designed for quick low cost change over, Angelus Can Closing Machines give you these essentials for more efficient operation—LOWER FIRST COST—LOWER MAINTENANCE—HIGHER PRODUCTION. The complete line of Angelus seamers with their wide range of accessories meet every round can closing requirement for any type of product, liquid or solid, from 30 up to 500 cans per minute Angelus, with over 45 years of specialized experience, is the nation's only manufacturer exclusively producing automatic round can closing machines.



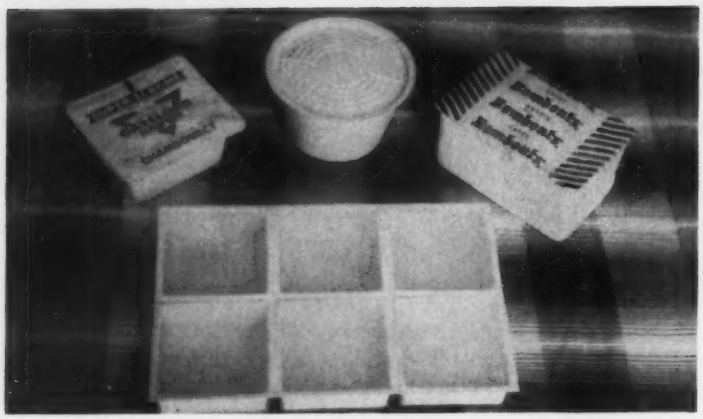
Write today for complete details. Specify products, can dimensions and your capacity requirements.

ANGELUS

Sanitary Can Machine Company

Cable Address "Angelmco" Western Union Code

CIRCLE 61 ON READER SERVICE CARD 61



MANY SHAPES, SIZES of low-cost plastic containers can be formed, filled, and sealed at high speed by new French machine. Left to right are square container for top-quality cream cheese, ribbed-cap tapered cup, and rectangular unit for coffee. Gang of six, before being cut apart, is in foreground. It's stated that in French operations costs have run much less than for prepared containers.

COMPACT IN DESIGN, machine continuously forms, fills, and seals packages in gang fashion. Filler is between forming and sealing supply rolls and mechanisms.

FE REPORTS ON EUROPE

Gang-Packages Foods in Plastic—Fast

French machine molds containers into plastic sheet, then fills and heat-seals, at speeds up to 16,000 per hr. in low-cost continuous operation

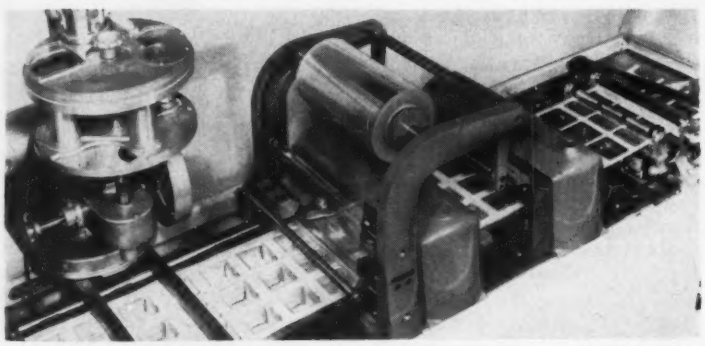
OUT OF FRANCE comes a significant new development in food packaging. It is a machine that automatically forms, fills, and seals thermoplastic containers at the phenomenal rate of 3,000 to 16,000 an hour. And the cost is reported to be half that for paperboard containers in France.

Twenty of these units are operating in food plants of France, Germany, Switzerland, and England, the developer told FE's Editor in Paris. And installations now are being made in this country.

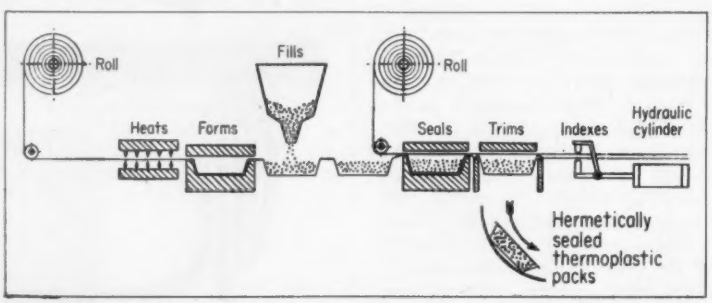
Invented by J. R. Nasica, Plastimecanique, the fast, versatile packaging unit, is being distributed in the U. S. by Roto-Wrap Div., Conapac Corp., New York.

A wide range of dry, plastic, or fluid foods can be packaged with the machine. In France, Chambourcy is using it for cream cheese. And coffee is being packaged with the machine by Rombouts in Belgium.

Here's how it works. A continuous sheet of thermo-formable plastic feeds from a roll through an infrared heater which softens it—all but a ½-in. strip on each edge. That strip



TOP VIEW of machine shows containers molded into plastic strip, filler, sealing sheet, and trim.



OPERATING SCHEMATIC shows forming, filling, and sealing in sequence.

SAFE

ROCHE BETA CAROTENE

YELLOW TO ORANGE COLORING FOR FOODS

Proved Safe. Foods containing beta carotene have been consumed for thousands and thousands of years, but Roche did not market its beta carotene until it had been tested and tested and tested again over a long period of time for acute and chronic toxicity. Such tests clearly demonstrated that Roche beta carotene is safe. Remember: beta carotene is one of nature's own coloring agents. *It belongs in food.*

No Coal Tar Color. Roche beta carotene is not a coal tar color! Beta carotene Roche does not contain coal tar! Beta carotene Roche is not in any way derived from coal tar! No coal tar constituent is introduced into the product during the Roche manufacturing process. Made from citral obtained from lemongrass oil and other natural products, and produced by carefully controlled scientific processes, Roche beta carotene is identical chemically and biologically (as provitamin A) with beta carotene contained in vegetables and other foods.

Order Roche Beta Carotene. Five convenient forms are available from Roche to suit your particular products and conditions:

- Beta Carotene and Vitamin A Blends in Vegetable Oil
- Beta Carotene Blends in Vegetable Oil
- 24% Beta Carotene; Semi-Solid Suspension
- 30% Beta Carotene; Liquid Suspension
- NEW! Dry Beta Carotene Beadlets, Type 2.4-S Water-Dispersible

SURE-PURE

VITAMIN DIVISION

HOFFMANN-LA ROCHE, INC.

Nutley 10, New Jersey
NUtley 2-5000
New York City — OXford 5-1400

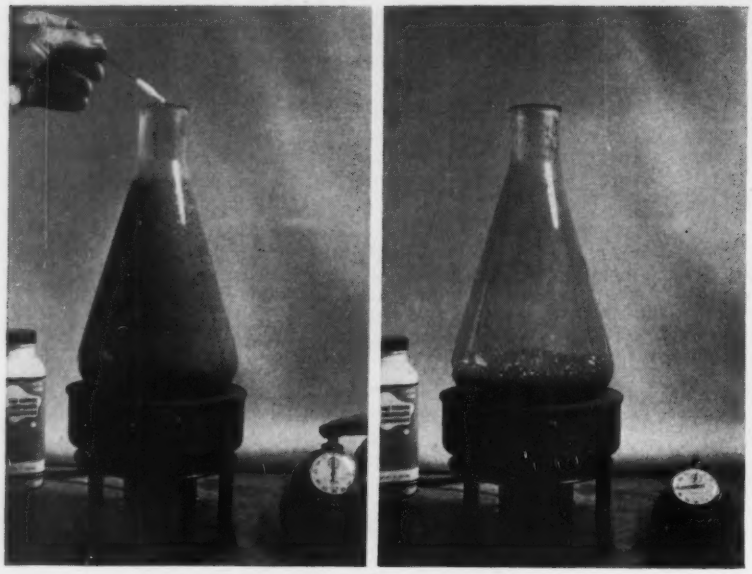
In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

Pacific Coast distributor: L. H. Butcher Co., San Francisco • Los Angeles • Seattle • Portland Salt Lake City

Trademark: Roche®

SILICONE NEWS from Dow Corning

Stop Foam Fast



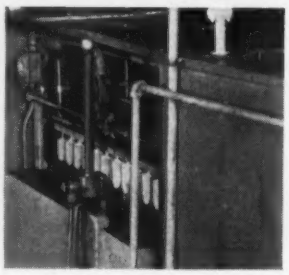
Dow Corning Silicone Defoamers Increase Production, Cut Costs

You can't beat Dow Corning silicone defoamers for foam control. Job-proved to be the fastest, most efficient and effective foam killers ever developed, Dow Corning defoamers speed processing time, reduce product waste, minimize maintenance and eliminate the chance of boil-overs and fire hazards.

IN WINE FERMENTATION

Easy-to-use Dow Corning silicone defoamers eliminate troublesome foam in the processing and packaging of foods, beverages, syrups and antibiotics. Highly effective at low concentrations, they knock down a mountain of foam and minimize recurrence, without contaminating the product.

Odorless, tasteless and physiologically harmless, Dow Corning Antifoam A may be used in nonstandard foods at concentrations up to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.



IN PROCESSING FROZEN BARS

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5521.

first in silicones

Dow Corning CORPORATION

MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

64 CIRCLE 64 ON READER SERVICE CARD

is water cooled so that the sheet may be pulled through the machine by hydraulic cylinder. Pressure and vacuum form the plastic to container shape (rectangular or cylindrical), and water-cooling sets it. One to several packages can be formed side by side across the plastic strip, depending on size.

The formed containers pass under a filler, which can be of any type required for the product. Then another strip of plastic from a second roll feeds into position on top of the packages, and this is sealed to the bottom by heat or high-frequency. In the final operation, trimming, the individual containers are cut free and feed from the machine by gravity chute.

Special Features

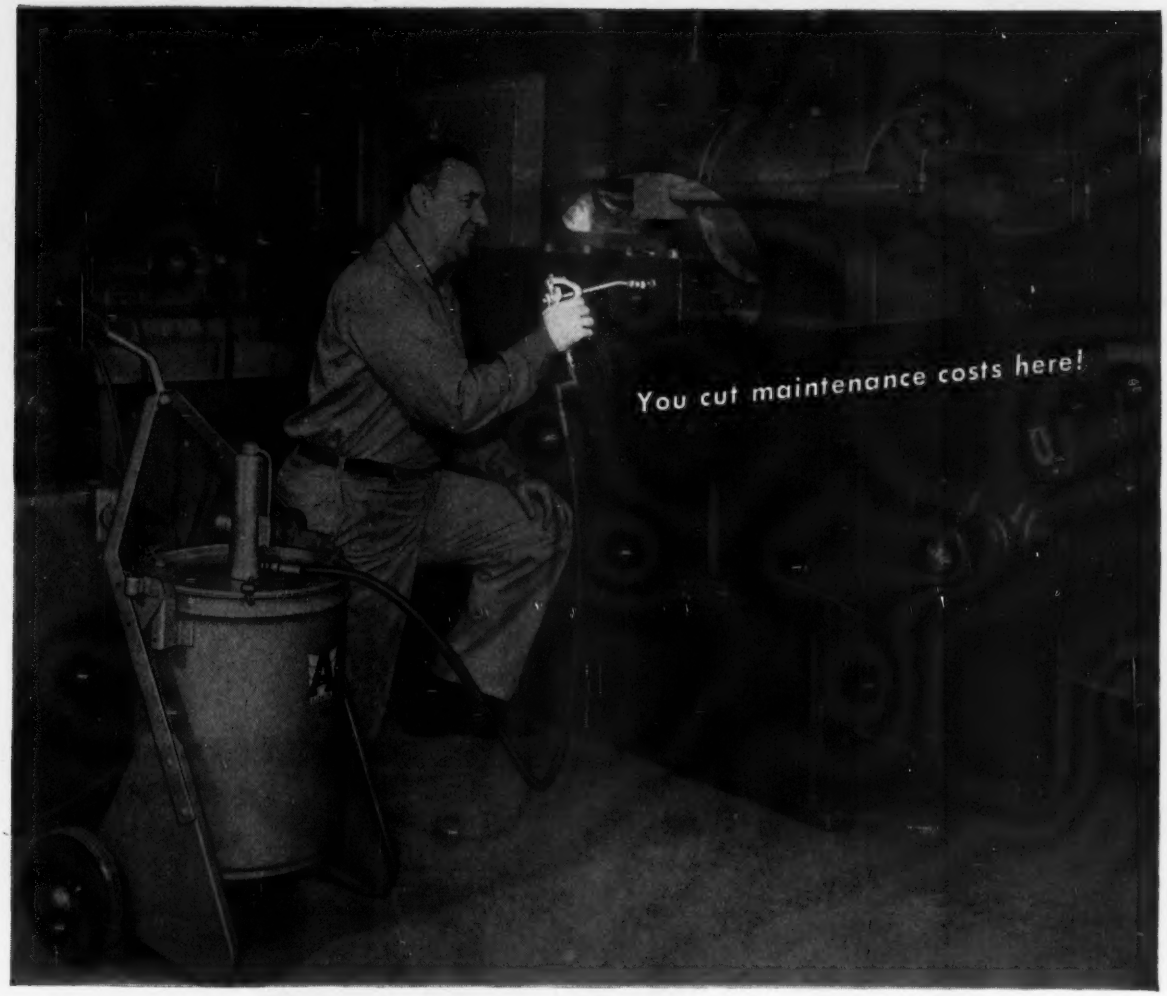
In such a gang-filling and sealing operation, it is essential to keep product off the sealing areas. This is achieved by quick knife cut-off of fill.

To assure proper position of the printed top sheet, photoelectric register is employed.

Another feature is a precision graduated steel scale lengthwise of the unit to permit easy and accurate positioning of various operating elements.

The machine is built for either automatic or semi-automatic packaging, handles any type of thermoformable film, and will seal with film or thermo-plastic coated board. It will take an 11-in. wide, 14-in. dia. roll of material. Forming area is 10x7½ in., maximum depth of draw, 3¼ in.–F.K.L.

"We're having a terrific year!"



Alemite Portable Lubricator Saves 95 Man-Hours For Every Drum of Lubricant Applied!

Every point of lubrication in your plant can cost you needless time and money if you use old-fashioned hand lubrication methods!

With this Alemite portable air-powered lubricator, you save *95 man hours* for every 400-lb. drum of lubricant applied. Over *two* weeks of one man's time saved. That's how you can cut maintenance costs with Alemite.

In addition, Alemite's Model "711-A" is so compact and portable that it can bring clean, waste-free lubrication to *any* machine—*anywhere* in your plant—reducing machine downtime and prolonging machine life. Its pivot-swing dolly holds container upright at any pulling angle for easy moving over rough ground, indoors over rough floors, even up and down steps!

Step up to fast-moving, time-saving lubrication methods! Check Alemite's complete line of air-powered and electric-powered lubrication equipment for industry.

Symbol of SW Excellence

ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

1850 Diversey Parkway, Chicago 14, Illinois

MAIL COUPON FOR COMPLETE INFORMATION!

Alemite, Dept. S-99
1850 Diversey Parkway, Chicago 14, Illinois

Please send me your free catalog of Alemite industrial lubrication equipment.

Name .....

Company .....

Address .....

City ..... Zone ..... State .....

High-speed STOKESWRAP produces up to 240 packages per minute

Designed to deliver maximum production in minimum space, the new four-tube Stokeswrap can form, fill and seal as many as 240 flexible packages per minute. One four-tube Stokeswrap costs less than . . . yet equals the output of . . . two conventional two-tube units. It is ideally suited for plants where floor space is limited, where increased production is desired and a replacement for obsolete equipment.

Depending on requirements, the four-tube Stokeswrap will form "pillow" or "four seal" types of packages from printed or unprinted roll stock of most heat sealable materials and laminations. Each tube has its own electric eye registration to assure proper positioning of the package design. Either conventional or impulse sealing can be provided with sealing and cut-off achieved in one simple operation. Webs are held in constant tension to eliminate jamming and other troublesome operations.

Capacities range from one gram to three ounces depending on product characteristics. Package sizes can be handled up to 2⅜" x 6¾". Special attachments for strip packaging, gas-fill packaging, coding, imprinting and hole punching can be supplied.

For complete information, write to:

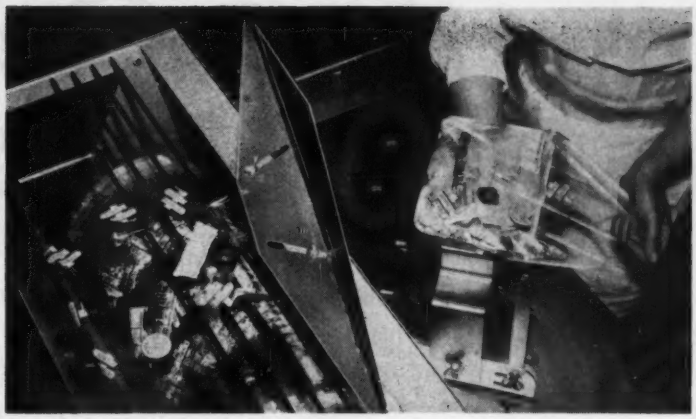
Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Stokes & Smith Plant

4914 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.



FROZEN AND VAC-PACKED chicken parts (left) are packaged on manual unit (right). Operator peels film from roll, cuts it on specially angled knife, wraps and seals package on hot plate.

Poultry Packers R_x: Freezing + Film

They said it shouldn't be done. But skyrocketing production and drooping profits prompted a try—and it worked!

DWINDLING PROFITS in the face of zooming sales—that's the unique problem faced by many poultry processors. Though the USDA has forecast a record processing run of 2 billion birds in 1959 (and some find this figure conservative), chicken packers are up against a vanishing net return on a formidable investment an impressive sales record.

Why?

Field leaders offer various explanations. But the weight of the blame centers upon the big jump in production along with a tardiness in turning to advanced packing methods. Will new packages provide the solution?

High pressure production has outspaced coordination of supply with consumer demand. Fresh-packed, the chickens are delivered to retail supermarkets for cutting and packaging in back room operations. Periodically, retailers, faced with a decline in poultry sales or a need to offer a lower priced item as a "lure" for the consumer, balk at poultry prices. The processor encounters the problem of letting his product spoil or letting it go at lower prices.

The argument that "people won't buy frozen chicken" is still raised as the main reason for 90% of packers sticking to fresh-packing. This means that the product must be moved fast. It also means that the rate of shrinkage and spoilage is high in shipping and display.

A survey of one Midwest supermarket chain showed a loss of 5.61¢ per pound in shrinkage and spoilage during the distribution cycle—more than enough to spell the difference between profit and loss for the grower and retailer alike. Even more serious, these extra costs are negative ones, hidden in other prices and often undetected.

One Packer's Solution

The answer may be in the new packaging operation at Plus Poultry, Inc., Siloam Springs, Ark.

This southern processor is using a new Cry-O-Vac process that employs a vacuum pack for frozen poultry. Tested in five West Coast supermarkets by the supplier, the new packaging system—

- ▶ Allows either retailer or grower to store the product in warehouses, outwaiting lags in consumer demand.
- ▶ Eliminates need for supermarket cutting and wrapping, since packer does all packaging.
- ▶ Permits packer to build a reputation for his own product via the label. Of course, he may also pack under a supermarket label.
- ▶ Drastically cuts shrinkage and spoilage losses.
- ▶ Helps move cut-up chickens further into the convenience foods category, boosting sales.

At Plus Poultry, chicken parts are cut and placed in trays, then conveyed to eight Cry-O-Vac wrapping units. These consist of individual tables with a special roller device holding a supply of Cry-O-Vac L-300 film. The table is equipped with a special V-shaped knife that cuts the film at the desired angle.

Operators dispense the film, wrap it around the chicken in the tray, and seal it on a hot plate. After weighing and marking, chicken is conveyed to a hot air tunnel, where the film is tightly shrunk.

Crated chickens are moved into a blast freezer, where they're quick-frozen at −40 deg. before shipping.

Results with the new package have been encouraging for the processor. The slight increase in costs has been balanced by a sales boost and the benefit of a more attractive package. Losses in shrinkage and spoilage have been cut boosting profits. —*End*

Creating The Package

Mais Oui!

Merck MSG brings out the best in flavor

It's easy to improve the taste of almost any processed food by using MSG from Merck. As your new basic source for this important flavor-enhancing ingredient, Merck offers pure monosodium glutamate—unsurpassed in quality—always uniform from lot to lot. Merck's technically advanced manufacturing process assures steady MSG production and dependable delivery. And as an *extra* benefit, Merck's Food Research and Technical Service Staff stands ready to help you solve product and production problems. Get the full story now by contacting your nearest Merck Sales Office.

a product of MERCK

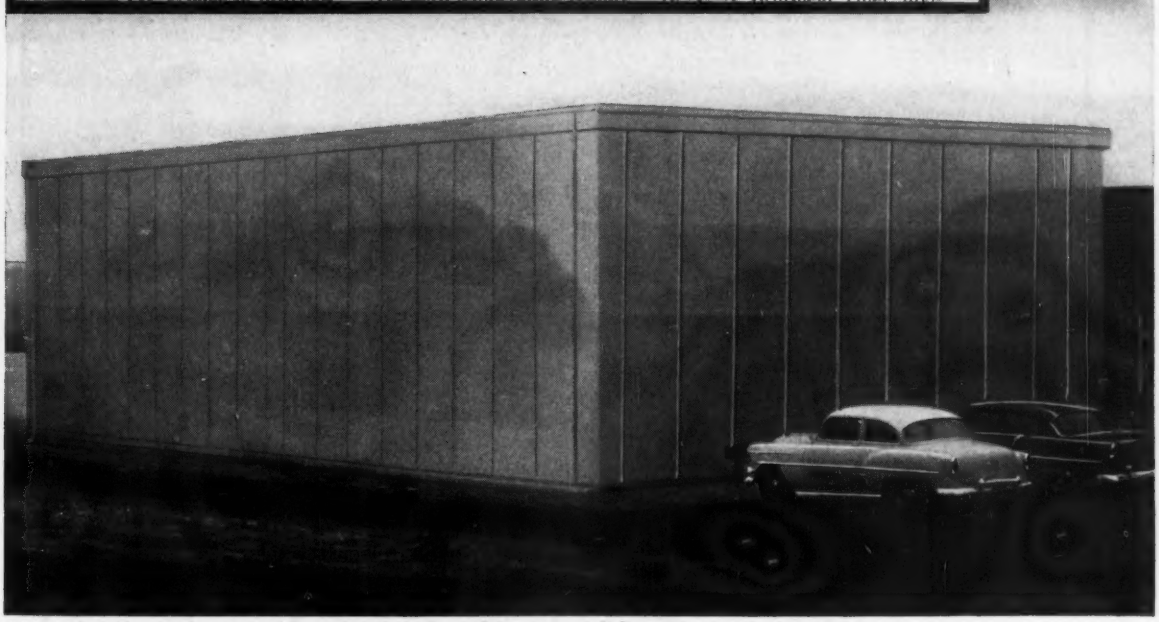
© Merck & Co., Inc.

MERCK & CO., INC., RAHWAY, NEW JERSEY

PACKER MEET HEARS

Food & Drug Code Calls for Maximum of Zero In Retailer Warehouses, Trucks, Store Cases

A standard zero temperature for frozen food products through every stage of distribu- Association of Food and Drug Officials of the U. S. The zero temperature require- Packers convention in Chicago. Making the presentation was Dr. C. S. Brinsfield, chief, divi-



Mounted outdoor on concrete slab, Armorply rooms reflect away sun's heat.

Looking for economical sub-zero storage?

Cold storage rooms made of prefabricated Armorply modules go up fast with ordinary labor; maintain temperatures down to —100°F.

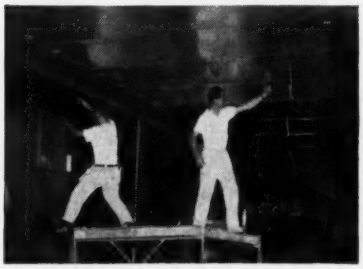
Cut installation costs. Armorply coolers can be installed directly on concrete slab, indoors or outdoors. In installation of freezing rooms, insulated floor sections are used. No masonry or other costly, space-taking construction is needed. And because the room can be installed quickly, you save on labor costs, too.

Cut maintenance. Armorply — metal-faced plywood — never needs to be painted and it wipes clean easily. Strong, highly impact-resistant Armorply minimizes the need for repairs; yet if damage should occur, single panels can be replaced.

Cut installation time. Armorply modules, as prefabricated by the Freezer Box Division of Annapolis Yacht Yard, Annapolis, Md., have a patented joint-locking device that eliminates sealing problems. Rooms can be assembled, expanded, dismantled and moved quickly with ordinary labor.

Give safe, sure temperature control. Armorply rooms maintain constant temperatures, warm or cold. Armorply will not absorb odors, and the modules' air-tight fittings afford complete protection against vapor and vermin.

Armorply, metal-faced Weldwood waterproof plywood, comes with faces of aluminum, stainless steel, zincbond steel, copper, or any other metal laminated to a variety of core types. Send the coupon for details and your free sample of Armorply.



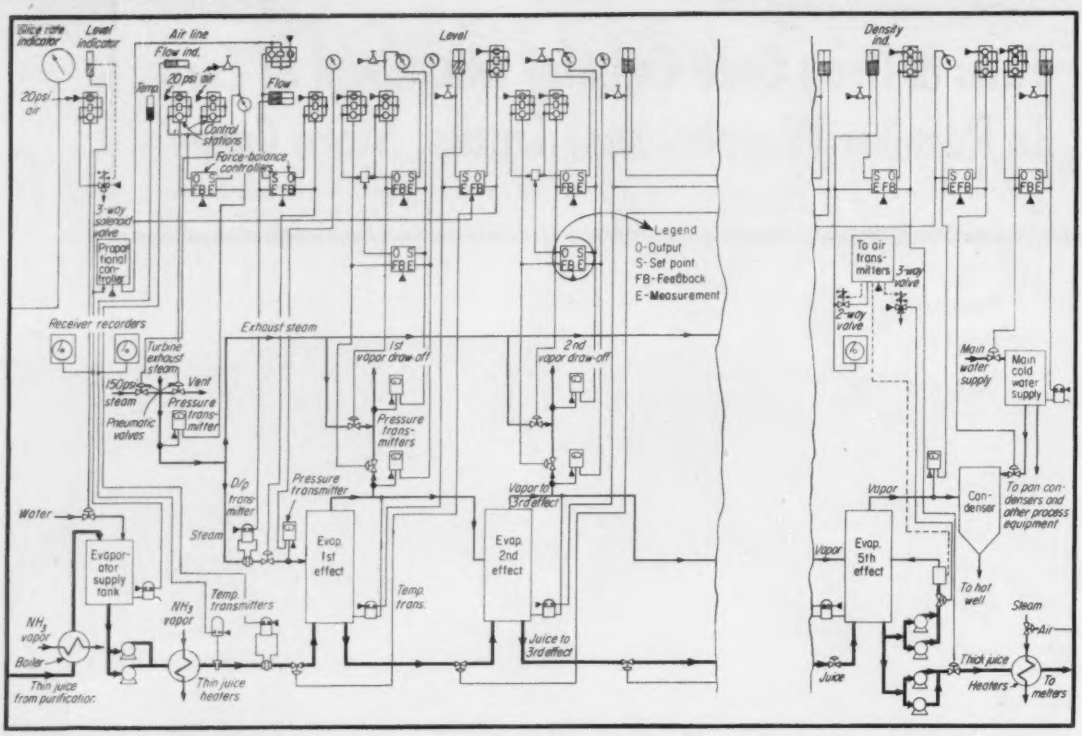
Patented joint-locking device speeds installation, gives air-tight protection.

WELDWOOD®
ARMORPLY®
Metal-Clad Plywood
Product of
United States Plywood Corporation

United States Plywood Corporation
55 West 44th Street, New York 36, N. Y.
FE9-59

☐ FREE: Please send me an Armorply sample and descriptive booklet, "Facts About Weldwood Armorply."
☐ Please have your representative call with full details.

Name.....
Firm.....
Address.....
City.....Zone...State.....



CENTRAL STATION monitors 5-effect evaporator (3rd, and 4th effects not shown) in beet juice concentration.

How Central Graphic Panels

Installed at 4 key stations in sugar plant, they reduce costs by improving process control, simplifying operator training and equipment maintenance, eliminating human errors

EXEMPLIFYING today's "last word" in scientific control of beet sugar manufacture are the four centralized graphic panels with pictorial instrumentation employed by American Crystal Sugar Co., Crookston, Minn.

These panels, which control the diffusion, carbonation and sulfitation, evaporation, and melter stations, have reduced costs in three important ways:

▶ 1. Being prefabricated, these panels are easier and less expensive to install.

▶ 2. Panels nearly always necessitate better engineering—and advances incorporated here further promote automatic processing.

▶ 3. Perhaps the largest cost saving is in simplified training of operators. With a seasonal operation frequently requiring hiring of new personnel, turnover is a problem. But these graphic controls reduce training time, give notable savings.

The panels comprise enlarged flowsheets on which are symbolized only those lines and pieces of equipment that are directly involved in the process control system. Flow lines, instrument connections, and process symbols are color-coded to present a simplified diagram of the process, with instruments and control elements located so as to show their relationship to the process.

To reduce panel size, "miniature" instruments have been used. These have the same readability as 12-in. circular charts—large reduction in surface area being obtained by making the case much deeper to provide room for full-size, accurate components.

They also differ from most controllers of the rectangular-case type in that they are pneumatic—operating on 3-15 psi. air signals regardless of actual range or variable involved.

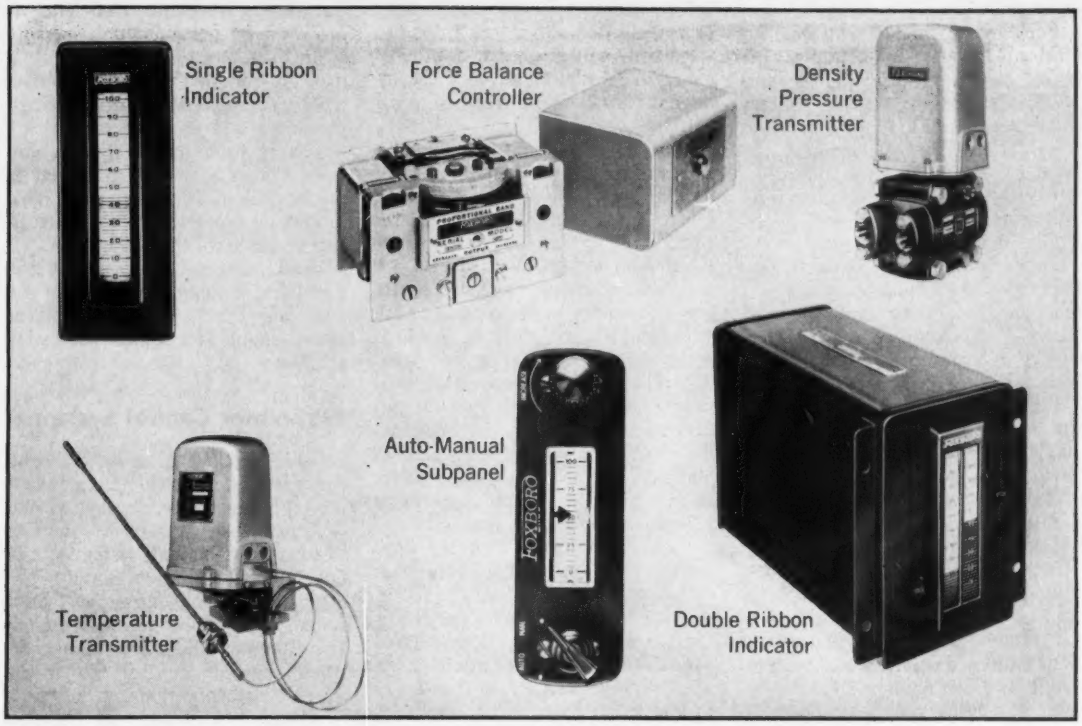
This is made possible by utilizing transmitters which convert measured variables into equivalent 3-15 psi. signals.

This construction lends itself exceptionally well to standardization, since all receiver-recorders, indicators, and controllers are identical, except for the chart or scale used.

To be economical and practical, a graphic panel must be engineered for the process. And there must be con-

HAROLD C. DYER and WENDELL S. YOUNG

Respectively, Engineering Department, American Crystal Sugar Co., Denver, Colo.; and Food Engineering Division, The Foxboro Co., Foxboro, Mass.



CLOSEUP of indicating, recording and controlling units employed in juice evaporation operation (left).

Automate Bulk-Food Operation

sideration of design and construction, integrated process control, and abilities of operating personnel.

Designing the Panels

Panel design and construction must be based on experience. Layout of front must first consider what to show, so that the diagram will be simple and clear. Instruments and accessories must be placed at proper levels for easy operation. Panel must remind operator of actual processing equipment so as to eliminate confusion in emergencies. And the color scheme selected must help present a clear picture without causing operator fatigue.

Rear of panel must be designed in conjunction with the front. Equally important, it must utilize good engineering practices for all component mounting, piping, and wiring, and must provide easy accessibility in event service or replacement becomes necessary.

Integrated process control design is exceedingly important in developing any graphic station. This was particularly true at Crookston because it was the first time in the sugar field that the full advantages of graphic panel control were utilized. The approach had to be considerably more thorough than was formerly necessary in applying temperature control to a heater, or level control on a tank.

Every process line, pump, and unit of equipment, as well as the operating procedure itself, had to be examined to assure an integrated, workable control system.

Pictorial Instrumentation

Instruments employed as indicators are used in such a way that an operator with little or no training can easily associate them with the particular variables involved. Separate recorders are mounted either below graphic display, at one end of panel, or on back of cabinet.

Most operators think of a gage column when they want to know the level in a vessel. The Foxboro ribbon indicator (Model 5001) was a "natural" for this indication. If, for example, the graphic display has blue process lines for water and the vessel in question is a water tank, indicator is furnished with a blue/white ribbon. As level rises and falls, blue portion of ribbon, showing through tank symbol, rises and falls just like water in the familiar gage column.

For pressure, most people immediately think of the conventional gage. Therefore, pressure measurements are indicated on circular 3½-in. receivers mounted in vessel symbols or process fluid lines.

Temperature brings to mind the familiar glass thermometer with a rising and falling red column. Seeing a ribbon indicator with red/white ribbon mounted vertically in vessel symbol or process line, operator immediately associates it with temperature measurement. Red process lines are used for steam and, since there is no such thing as steam level, there

is no danger of the red/white ribbon being mistaken for that level.

For flow measurements, ribbon indicator is mounted horizontally, with visible color increasing in direction of flow as flow increases. Ribbon color corresponds to process line color for fluid being measured, the same as on liquid level indicators. No confusion can result, since level indicators are always mounted vertically, flow units horizontally.

Other variables are similarly represented pictorially. For example, a red/blue ribbon is used for pH, showing the familiar red to blue change as a product goes from acid to base.

For variables which are controlled, the double-ribbon indicator (Model 5002) is utilized with both ribbons having the same color. For example, a temperature indicator-controller has two red/white ribbons, one showing the measurement, the second the control set-point. When the two ribbons read the same, variable is at control point.

Pressure indicator-controller stations employ dual circular indicators. Front (white) pointer shows pressure, and back pointer (with only a red arrow visible on outer circumference of dial) shows set-point.

Control set-points are easily changed by turning a knob directly below indicator-controller station. To eliminate confusion, knobs are engraved with an arrow and the words "Raise Control Point." Actually, these knobs do nothing more than set pressure regulators mounted in back of panel.

The all-metal, force-balance controllers (Model 58) are mounted on back of panel in conventional manner, and operator need not even know they exist. Out of sight, they do not confuse or worry him. Likewise there is no danger of someone mistakenly changing controller settings and causing process upsets.

Auto-Manual Stations

The one remaining necessity is an automatic-manual station for each controller. This unit is purposely separated from indicator-controller station because operators with insufficient training habitually forget instruments in an emergency. Their first thought is to position a hand valve manually. Therefore, the automatic-manual stations (modified Model 57SRG2, mounted vertically) are located in control valve symbols and are arranged for simple, straightforward operation.

Switching from automatic to manual or vice-versa is accomplished by a two-position knob mounted in valve body part of symbol. Symbol is engraved "Auto" on left and "Man" on right to show clearly position of switch.

Vertical dual pressure indicator shows through valve stem part of symbol and pointer moves up and down just like the stem indicator customarily found on a control valve. Pointer on left indicates valve position on automatic control, pointer on right shows position on manual.

Indicator has a dual scale which shows valve position as percent opening and as an air pressure signal, thus satisfying needs of both operator and instrument mechanic. In addition, the dual gage arrangement permits bumpless automatic-manual transfer by matching the two pointers before turning automatic-manual knob.

Pressure regulator used for positioning valve on manual control has its adjustment knob located at top of valve symbol. Since operator is accustomed to the conventional handwheel in this position on a manually operated valve, it is easier to find in an emergency. Symbol is engraved "Close" on the left and "Open" on the right, or vice-versa depending on the valve action.

Operation of this automatic-manual station requires more thought than the old practice of ignoring the instrument and manually positioning a hand valve in an emergency. Yet, with controls in a familiar location, process operators quickly master them, whereas automatic-manual stations within the instrument tend to be confusing. Operators particularly like having valve position indicated continuously on the panel in a pictorial fashion.

Evaporation Station Detailed

Now let us examine the operation of one of the four sections controlled by centralized graphic panels—the evaporation process that concentrates purified thin juice to a thick product ready for crystallization.

This station is of major importance since, in addition to concentrating thin juice, the vapors provide heat for much of the processing equipment in the plant. Units are also sources of pure condensed water for boiler feed and other processes.

Heat is supplied primarily by exhaust from turbines that use high pressure steam directly from the boilers. Since it is impossible to keep use and production exactly equal, production is kept slightly below normal demand. Deficiency is made up by bleeding high pressure steam into turbine exhaust at a make-up station. A duplex-type controller automatically positions high pressure steam make-up valve.

Vapors from first body are condensed in a 2nd-effect steam chest to produce additional evaporation. This process is repeated through successive bodies until the 5th-effect vapor is finally condensed by a barometric leg. Parts of vapors from each of the first four effects are drawn off as steam supply for other processing operations.

Evaporator Control System

To be efficient, an evaporator control system must satisfy the conflicting requirements of evaporation and vapor draw-off. It therefore consists of two independent systems properly integrated for maximum efficiency and steam economy. First system provides for juice concentration by evaporation. Second one for vapor draw-off control under the variable load conditions encountered.

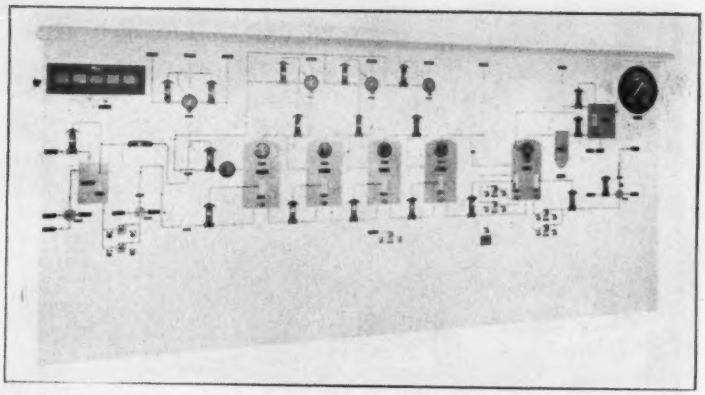
Taken into account in the first system was the fact that multi-effect evaporators operate more smoothly and at maximum efficiency when vapor pressures are allowed to fluctuate and seek their own balance.

Juice level in each effect is measured by Foxboro force-balance differential pressure transmitters that operate without mercury or float mechanism. A simple zero-adjustment screw on transmitter permits wide flexibility in tap locations without critical spacing requirements. It also permits using simply maintained outside water leg without sacrificing standard forward-reading level signal to controller and level indicator on panel.

Controller maintains level at desired value, set by a knob on panel. It positions valve in juice feed line to evaporator body being controlled. Same level control system is applied to all five effects. This arrangement provides effective automatic regulation of juice passage through evaporator and eliminates any possibility of burn-on or flooding.

Evaporation rate is controlled by means of steam flow to 1st effect and absolute pressure control on 5th effect.

Steam-flow measurement is obtained with an orifice plate and differential pressure transmitter. Flow rate and set-point are both indicated on panel, and a valve in steam line



PANEL employs miniature instruments simulating actual control units. These are connected by colored lines representative of products.

to 1st effect is positioned for accurate flow control.

Absolute pressure of 5th-effect dome is measured and transmitted to panel, where it is indicated for guidance of operator. Set-point, easily changed when necessary, is also indicated. Pressure is controlled by positioning valve in water line to condenser.

Automatic Density Control

A sample pump removes juice from 5th effect and passes it through a Densitrol density transmitter. Signal from unit, which is automatically temperature-compensated, is an electrical voltage converted to a proportional air signal by a Foxboro transducer. Resulting density measurement is indicated on panel, along with desired set-point, which is easily adjusted by operator when necessary. Thick juice density is controlled by positioning automatic valve in discharge line.

Evaporation rate is adjusted to utilize available thin juice by maintaining last effect absolute pressure constant and automatically varying steam flow to 1st effect.

Thin-juice supply tank level is measured and indication transmitted to a proportional controller whose output air signal automatically sets steam flow control point. An automatic-manual control station is provided so that flow control point can be manually set when desired during evaporator start-up or shutdown. In addition, supply tank level indicator on panel has low level control setting that automatically dumps water into tank if a predetermined low level is reached, insuring that the evaporator will never run dry.

Regulation of vapor draw-off is accomplished by a unique system installed for the first time at Crookston. Basically, it consists of a pressure control system on each of the first three effects. Vapor draw-off from 4th effect is relatively small and constant, needing no control.

On each of the control systems, pressure in draw-off line is measured and transmitted to a controller. This unit positions a butterfly valve in draw-off line so that just enough vapor is removed to maintain desired pressure. When draw-off load is large, control valve will open wide. If pressure still tends to drop below set-point, because of insufficient evaporation to meet demand, a 2nd valve admitting exhaust steam will begin to open, allowing just enough to enter to maintain correct set pressure.

This arrangement assures available vapor in sufficient quantity for other processing equipment and, in addition, insures that this vapor is always at a controlled pressure.

Control of Makeup Steam

To prevent exhaust steam-makeup from flowing into evaporator, Foxboro Auto-Selector controls are used. Dome pressure on first three effects is measured and transmitted to individual pressure controllers. Each controller has a set-point equal to corresponding effect draw-off line pressure. Thus control on each effect actually consists of a draw-off line pressure controller and a dome pressure controller.

Output air signals from both controllers are sent to a selector relay, which automatically sends lowest air signal to draw-off butterfly control valve. This arrangement provides precise draw-off line pressure control with no danger of exhaust steam flowing into dome of any effect, since it permits use of proportional plus automatic reset control action without controller "windup."

Process operator has continuous indication of each vapor draw-off line pressure and each dome pressure for his guidance. Also, each draw-off line pressure set-point is indicated and provided with a convenient knob. All control valves are symbolized on panel and provided with automatic-manual stations.

Juice leaving evaporator at a controlled density of approximately 65 deg. Brix is pumped to thick-juice heaters. Its temperature leaving heaters is measured and controlled by positioning a valve in steam line to heaters.

Recorders, Pushbuttons

Other instrumentation at evaporator station consists of receiver-recorders for thin-juice temperature, evaporator supply tank level, and thick-juice density. Also "Start" and "Stop" pushbutton stations with green "On" signal lights for all pumps, a Pan alarm station to warn of abnormal conditions, and a beet slicing-rate indicator so that operator is always aware of factory production rate.

In addition, main water supply tank level is controlled from this station because of the physical proximity of the tank to the evaporator. Tank water level is measured with a force balance transmitter, and the controller positions a large cylinder-actuated butterfly valve in the main water supply line to the tank.

This extensive use of instruments—particularly centralized panels with pictorial instrumentation—has proved that properly applied automatic control pays big dividends.

Process control has been so greatly improved at Crookston that technologists have referred to the plant as the most modern and efficient beet sugar operation in the world.

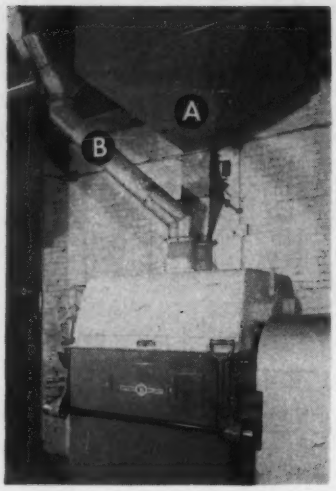
As stated, operator training, always a problem in seasonal food processing, has been greatly simplified by the pictorial view of instruments and process. Instrument maintenance has been negligible, but when necessary is easily accomplished with the standard components used.

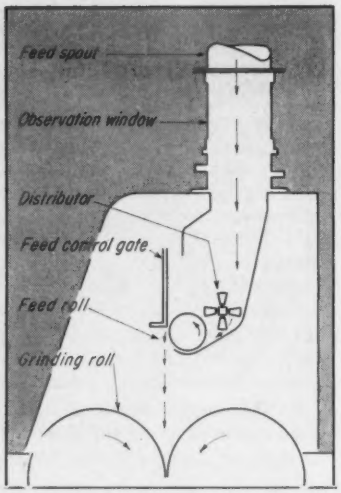
The engineering foresight in thus applying instrumentation to its fullest extent has assured maximum benefits and dollar returns from the original investment. —End

For free reprint of this article, write O-3 on Reader Service Card, back of issue

This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 127 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence





DOUBLE ROLL MILL is fed whole pepper berries from surge tank (A). Pipe (B) returns tailings from sifter to 2nd roll. Right: Details of special feed.

Tips on Fine Grinding

Proper combination of equipment and know-how enables spice firm to do fastest job without sacrificing quality

HIGH-SPEED in grinding of spices, such as pepper, can be fraught with numerous difficulties. Most important is generation of excessive heat that causes unnecessary loss of oils.

But Durkee Famous Foods, Bethlehem, Pa., has solved the problem —thanks to the proper application of know-how and advanced units. Company is now grinding pepper to minus-30 mesh at a 2,000 lb./hr rate. Finished product is of high quality and attractive in appearance.

The system at Durkee consists of a Sprout-Waldron double roller mill, bucket elevators, screw conveyors, stream splitter, and a S-P/Richmond Gyro-Whip sifter.

Here's how it operates: Pepper berries, fed through a dump hopper on second floor, pass over a grate magnet into a surge bin, where they are retained until needed.

Since uniform feeding to the roller mill is vital to successful grinding, this system incorporates a scale feeder. And to provide even distribution across effective length of rolls, a roll-type feeder is used.

Material enters feeder through oval-shaped flange inlet made of Plexiglas (so flow is always visible to operator). A specially designed gate with convenient screw adjustment assures a constant, even flow. And a simple throw-out clutch is provided so that feeder can be started or stopped independently of the grinding rolls.

An important feature of the mill is the simplicity and speed with which accurate and positive roll adjustments can be made. This is accomplished through a convenient hand lever that actuates an eccentric-mounted shaft extending the full length of mill and connected to both roll pressure control arms. It permits setting and aligning of the rolls from one point and provides for quick throw-out of each pair of rolls.

It's in the actual operation of the mill, however, that the art of pepper grinding plays its most important role. Experience of the operator, his close visual attention, and his "feel" for the work are invaluable. For when grinding at high rates, decisions must be made fast, and equipment must be kept in top condition.

From the mill, the ground pepper passes to a conventional screw conveyor that feeds an all-steel self-supporting single-leg elevator 30 ft. high. Elevator discharges into stream splitter, which mechanically divides flow equally between the two sections of sifter. Oversized material flows by gravity to second break of mill, then returns via above cycle. —*End*

ROY STIGER
Chief Product Engineer, Size Reduction Div., Sprout, Waldron & Co., Muncy, Pa.

"Knox's quality product meets our rigid specifications," says production manager of major food packing firm

The production manager of one of the South's largest packers of peanut butter, jams, jellies, mayonnaise, coffee, and salad dressings,* recently reported on his firm's extremely large use of glass containers:

"Thermal shocks involving rapid temperature changes and production line speeds of more than 100 units a minute, innumerable sharp impacts of glass-on-glass and glass-on-metal, and top clarity to permit immediate product recognition—these are all factors that must be overcome by our glass container suppliers.

"We've been using Knox Glass jars and bottles continuously for almost 15 years. They have consistently met our requirements in dimensions, cleanliness, clarity, and delivery service. They deliver a quality product that meets our most rigid specifications.

"Prompt delivery—often overnight—with a minimum of rejects is also a must for our operation. We plan on operating with a minimum glass container inventory, so the glass suppliers we use have to really give us service. We get this kind of service from Knox."

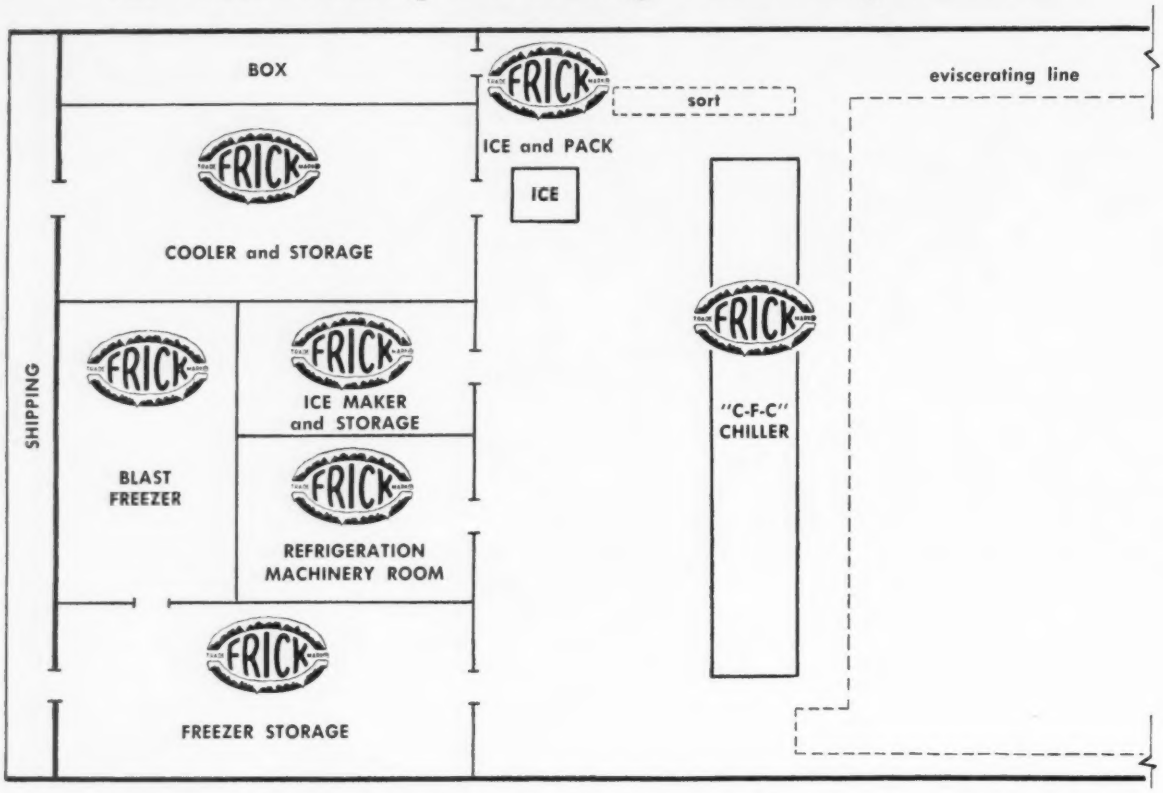
Let your Knox representative show you how Knox can supply you with top-quality glass and top-quality service —consistently. Contact Knox Glass, Inc., Knox, Pa.

*Name available on request.

the new / **KNOX GLASS**

MANUFACTURERS REFRIGERATION EQUIPMENT

for Your Poultry Processing Plant Requirements



ONLY FRICK COMPANY offers a complete line of refrigeration equipment for your use from the machine room to all phases of cooling, freezing, ice making and storage, plus the ability to design and install these systems.

FRICK Heavy-Duty and "Eclipse" compressors have long been a standard of the industry, giving long life service and economical operation.

FRICK condensers, shell and tube coolers, instant water coolers, ice reserve units, prestfin coils and air cooling units are all constructed for long life and have components to make a balanced refrigeration system.

FRICK Shell-Ice is widely accepted by the poultry industry as the most efficient and economical type of fragment ice for both chilling, packing and shipping. Shell-Ice is made automatically with thickness from 1/8" to 3/8", and can easily be handled in conveyors or blowers.

Frick Live Bottom Bin Bottoms for the storage and automatic dispensing of Frick Shell-Ice provide a sure and trouble-free method of automatically dispensing ice to the plant.

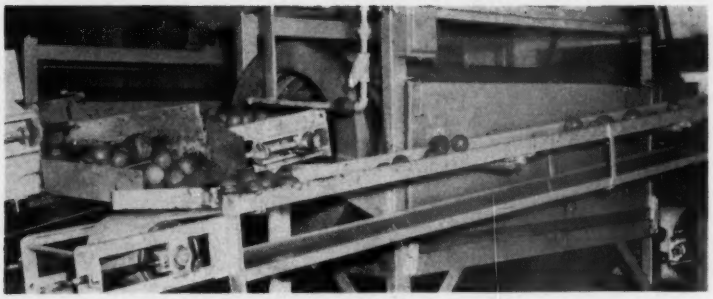
FRICK "C-F-C" Chillers for cooling poultry are the latest addition to complete the line of refrigeration equipment to serve your poultry plant. The "C-F-C" Chiller will provide chilled, drained, clean birds from clear-clean-cold water, with only one unit required.

Contact us! Tell us the size of your birds, capacity of your plant, and refrigeration needs so that we may show you how a Frick system can help you cut overhead, improve operations and make greater profits possible.

DEPENDABLE REFRIGERATION SINCE 1882

FRICK CO.

WAYNESBORO, PENNA., U. S. A.



TWO SIDE-BY-SIDE skin-loosening cylinders receive tomatoes from scalder at capacity of 12 tons per hour. Another 6 tons bypass units on belts driven from ¾-hp. motors that rotate the specially designed cylinders.

Canner Speeds Peeling 20%

—with rotating-cylinder units that 'roll skins loose' from tomatoes leaving the scalder . . . Yield, quality also boosted

JUST A SIMPLE CHANGE—yet it's cut down tomato peeling time one-fifth at the Bluffton Foods, Inc.

This Eastern Indiana plant was dumping its tomatoes into 8 in. of water flowing at 200 gpm. in a 12x15-in. flume. Flow then diverted to two lines, each handling 9 tons per hr. Inclined flight conveyors, with overhead water sprays, next elevated the produce into the scald tank for a 30-sec. dip in steam-heated water.

Tomatoes were then discharged onto two peeling belts, each flanked by 120 girls. But skins were difficult to remove, resulting in lower quality and insufficient yield.

Today, operations continue in this same way—except for the one simple change: Tomatoes coming from the scalder now pass through a pair of Peelezy skin-loosening machines (provided by the Mark Lowe Designing Service, 3103 Wayne St., Connersville, Ind.) before proceeding to peeling belts. Capacity through each of the new units is 6 tons per hr. The excess 3 tons of tomatoes on each line bypass the machines on a belt (driven by power-takeoff).

The Peelezy is simply a rotating 2½x9-ft. cylinder through which the tomatoes pass. Cylinder incorporates a rigidly mounted steel rod (2½-in. wide) formed into a spiral. Coating this rod is a specially shaped rubber strip with flanges extending into openings between turns of the helix. Flanges form a pliable groove in which tomatoes roll while passing through cylinder. Skin loosening is achieved through gentle kneading action of rubber strip.

For most efficient action, only two or three tomatoes should roll in a groove. To accomplish this, a vari-speed drive automatically regulates rotation rate of cylinder. Proper tomato-rolling action is also furthered by a nozzle-type water spray.

Broken or too-soft tomatoes are removed from the lines before they reach the skin-loosener — for they interfere with the desired roll.

Since tomatoes with firm flesh make for optimum operations, Bluffton carefully guards against rough handling of the produce. Further, proper scalding is accented — this cannery's unit being equipped with automatic temperature controller and conveyor with vari-speed drive.

Accordingly, luke warm water sprays do a good job in the skin-loosening operation. And there's a minimum of temperature adjustments (as changing to required hot sprays for unscalded tomatoes, or cold sprays for over-scalded ones).

Other benefits: Besides the easier, faster peeling, the change has increased the volume of peeled stock garnered.

Moreover, quality of canned product has been improved, since more skin is loosened around the core-end of the tomato. Thus, there's less cut-away of the tops in peeling. Also, light cracks, green shoulders, etc., come off with the skin so that a greater percent of tomatoes are canned whole. —*FE Staff*

New Low Cost Chlorinated Water Supply FOR FOOD PROCESSING PLANTS

KLENZADE

KLENZADE

IN-PLANT WATER

Chlorination

★ SIMPLE EQUIPMENT

★ LOW COST CHLORINE

★ "SPOT" LOCATION

Completely automatic feeding of Klenzade XY-12 Liquid Sodium Hypochlorite into your water line with a %Proportioneers% Heavy Duty Midget Chlor-O-Feeder. Low initial equipment costs, simple installation for any section or entire plant system. No skilled operator needed, no gas risks, no maintenance of elaborate equipment. Solution strength easily adjusted for clean-up time. Get the facts on this popular Klenzade "Package" and why it is ideally suited for your food processing operations.

COMPLETE

Sanitation Programs

Branch Offices in Principal Cities

KLENZADE PRODUCTS, INC.

BELOIT, WISCONSIN

US SteepGrade CONVEYOR BELTS

U. S. STEEPGRADE, serving the world's great airlines

When any industry heavily favors one type of belting, it's for a reason worth investigating.

Next time you're at an airport chances are you'll be able to see U. S. SteepGrade Conveyor Belting in action. You'll see it carrying cargoes on steep inclines and declines—as steep as 45 degrees. It speeds up loading, reduces manual labor for today's leading airlines.

Notice the gripper cleats in SteepGrade. These cleats are *not* attached or cut in; they are *molded*—a true and integral part of the belt. That's why they cannot be torn off by heavy boxes. SteepGrade is weather-resistant, will not stiffen in extremely low temperatures and is self-cleaning.

And just as SteepGrade is necessary to airlines' operation, so also is it indispensable in many other industries.

SteepGrade Belts—plus engineering assistance—are available through your local "U. S." Distributor.

• • •

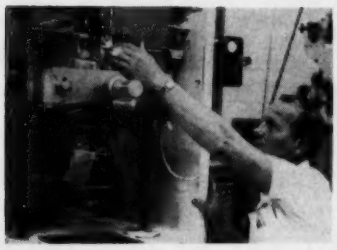
When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

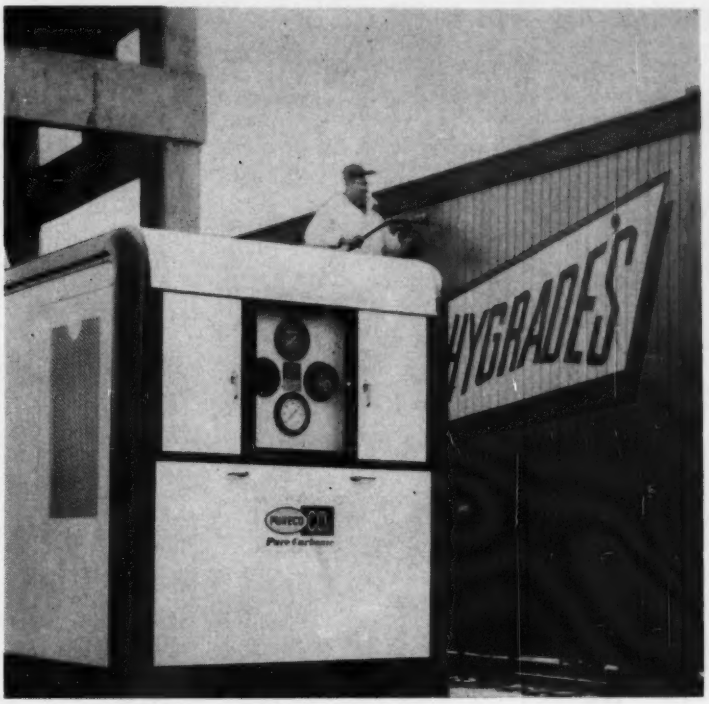
Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.



'Eye' Provides Safety

Adjusting cellophane in our packaging machines may best be done while machine is operating—but it's most dangerous to do it then. Greatest danger is the sealing jaw which, with its 300 psi. pressure, could crush an operator's hand.

To obviate this chance, we installed an electric eye (photo) beamed across the area in which the jaw operates. Now, if an operator reaches into this danger area, it breaks the beam, shuts off the jaw. Eye is a $37 model sold to homeowners to actuate door chimes.—*H. W. Lay & Co., Inc., Atlanta, Ga.*



Blasts of CO_2 Chill Cars

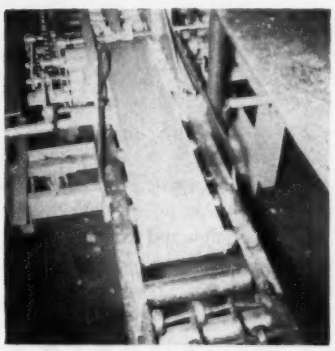
For quick-cooling perishables in cars or trucks, try blast-chilling liquefied CO_2 into carrier interiors (see photo). This preserves food products from 4-8 hr., until carrier's own refrigeration system takes over. It takes but 2-3 min. to spray the CO_2 "snow" into car from multi-ton bulk liquid receivers in which it is stored.

Further advantage is displacement of air in carrier with a super-dry atmosphere to minimize water condensation and help maintain proper cooling.—*Pure Carbonic Co., N.Y.C.*

More Lift for Fork Truck

Our ingredient loading-section is on a mezzanine, 12 ft. above the plant floor. However, our lift-trucks with pallet-loads of ingredients would only reach 11 ft. So we modified one by installing two vertical, elevating-slides (4½ ft.) to which the truck's blade assembly is secured.

Now, operator merely sets the load on an elevated platform, lowers the truck's mast until the slides rise vertically and latch at a position 12-in. above conventional position. He then moves load off of platform and, with this added height, is able to elevate the pallet-load to the mezzanine floor.—*C. W. Richardson, Production Manager, Orange-Crush Co., Evanston, Ill.*



Prevents Case-Sealer Jams

Our case sealing machine (Elliott Mfg. Co., Fresno, Calif.) was not originally equipped with a powered, feed-in surge conveyor. So when we operated our line at top-speed cases would jam on gravity conveyor, necessitating an operator to manually push them into the sealer.

To obviate this time-consuming

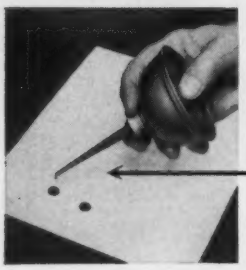
Send FOOD ENGINEERING Your Ideas

We'll pay $5 to $15 (sometimes even more) for each item used.

Just send us the facts about your idea and its application. And include a sketch or snapshot to show how it works. We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.–The Editors.

HAVING PACKAGE TROUBLE BECAUSE OF FATS GREASE OILS ?



GREASE-PROOF PATAPAR STOPS PENETRATION

NO GREASE "CRAWL"

THE TEST: Drops of oil placed on this Patapar remain on the surface indefinitely. The oil will not spread or "crawl." No seep through.

As a packaging material, or wherever a grease-proof barrier is required, new types of Patapar Vegetable Parchment provide positive resistance. With these grease-proof Patapars there is no penetration. Oil will not spread on Patapar's surface. There is no grease crawl—no "wetting".

Patapar is used alone for packaging, or laminated to other materials for end uses such as fiber drums, spiral tubes, cartons.

Patapar gives you WET-STRENGTH, too

High wet-strength is a basic quality of the many different types of Patapar. And, made from pure cellulose, Patapar is odorless, non-toxic. *It is furnished plain or colorfully printed.*

If you would like to test Patapar, write us telling your requirements. We'll send technical information and samples of the type we recommend for your purpose.

Patapar® VEGETABLE PARCHMENT

HI-WET-STRENGTH · GREASE-RESISTING

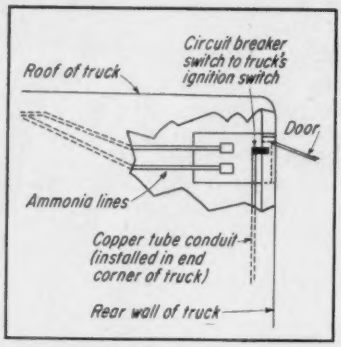
PATERSON PARCHMENT PAPER COMPANY, *Bristol, Pennsylvania*

West Coast Plant: Sunnyvale, California · Sales Offices: New York, Chicago

SPECIAL PAPERS FOR SPECIAL PURPOSES

Practical Ideas

problem we added 6 ft. of belt-conveyor to sealing machine. It not only provides a surge-area but, from filling station, cases now ride the gravity conveyor to this belt which feeds them into the sealer without attention or time of an operator.—*Wm. Parker, Night Sup't., Patterson Frozen Foods Co., Patterson, Calif.*

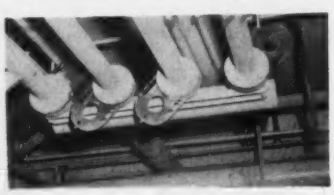

Circuit breaker switch to truck's ignition switch
Roof of truck
Door
Ammonia lines
Copper tube conduit (installed in end corner of truck)
Rear wall of truck

Prevents Damage to Reefer

A costly, if not more serious accident may occur, if driver of a refrigerated truck cooled by plant system pulls away from dock without first unhooking the ammonia lines.

Here is a hookup that obviates this possibility: Continue truck's ignition circuit to a circuit breaker switch (sketch) which is actuated by small door in truck body through which plant's ammonia lines are connected.

When small door is open, switch breaks circuit and truck cannot be started. Driver must remove ammonia lines and close the door before he can start motor.—*Clyde E. Gross, Chief Engineer, California Ice & Cold Storage Co., Long Beach, Calif.*



Flanges As "Sight-Valves"

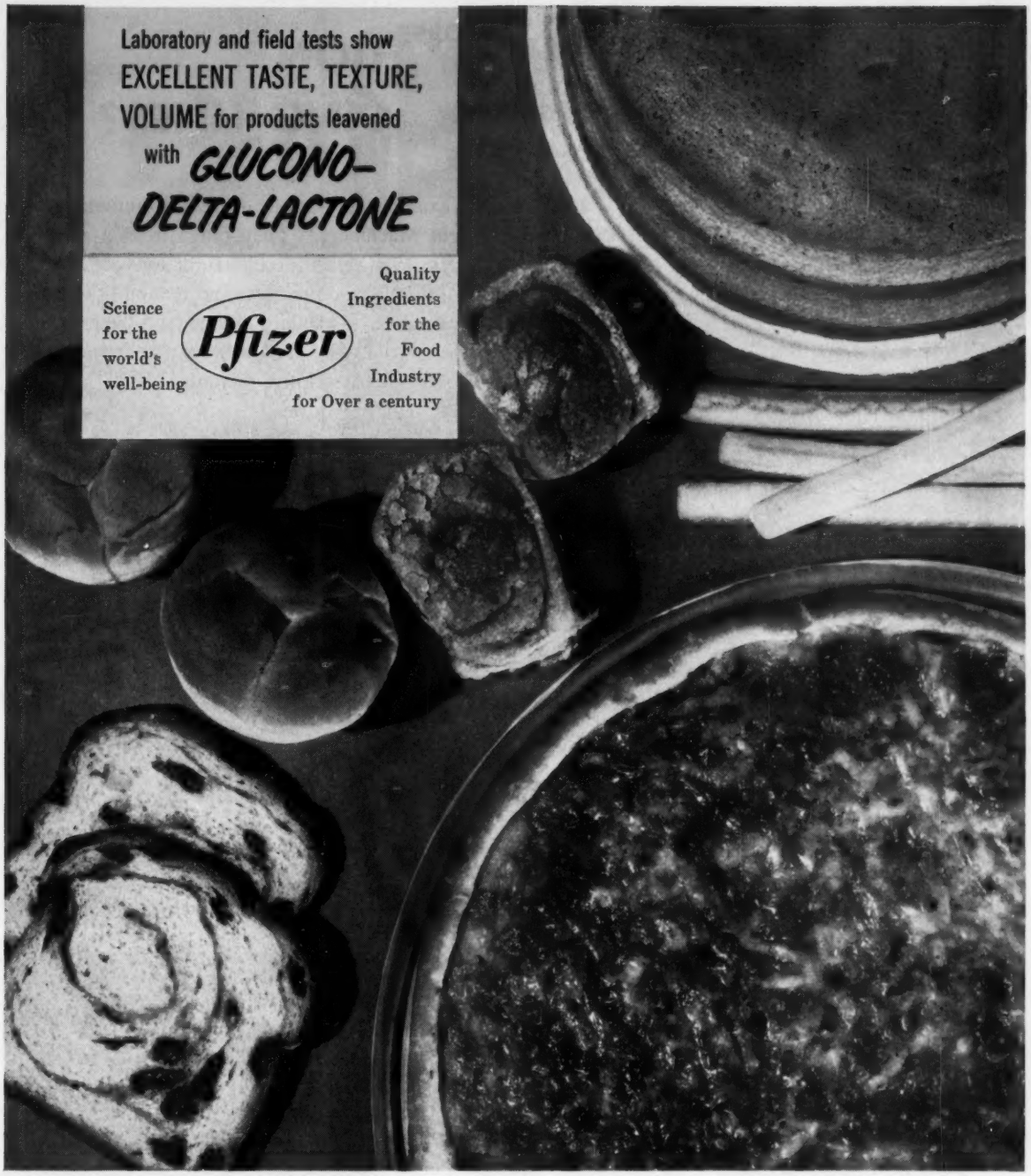
It was difficult to determine quickly when the conventional type valves we use in our vacuum system were open or closed. So we developed these "monocular" flanges. Now, just by glancing at these one-

Laboratory and field tests show
EXCELLENT TASTE, TEXTURE,
VOLUME for products leavened
with *GLUCONO–DELTA-LACTONE*

Science for the world's well-being

Pfizer

Quality Ingredients for the Food Industry for Over a century



CAKE MIXES • CINNAMON ROLLS • BREAD STICKS • ROLLS • PIZZA • RAISIN AND OTHER BREADS

The baked goods you see here were made with G-D-L. They have a fine, even texture, show excellent volume, and have no unpleasant after taste.

In addition, G-D-L's observed low level of activity in storage and in the mixing stage indicates that there is very little loss of leavening power during normal shelf life and only slight release of carbon dioxide during mixing. The fact that the gas is developed mainly in the baking cycle is a distinct advantage in prepared cake mixes, general purpose mixes and specialty mixes where long shelf life is a factor.

I am interested in investigating the potential of G-D-L in my products. Please send me:

☐ G-D-L Technical Data ☐ Free Sample of G-D-L
☐ Suggested G-D-L formulations

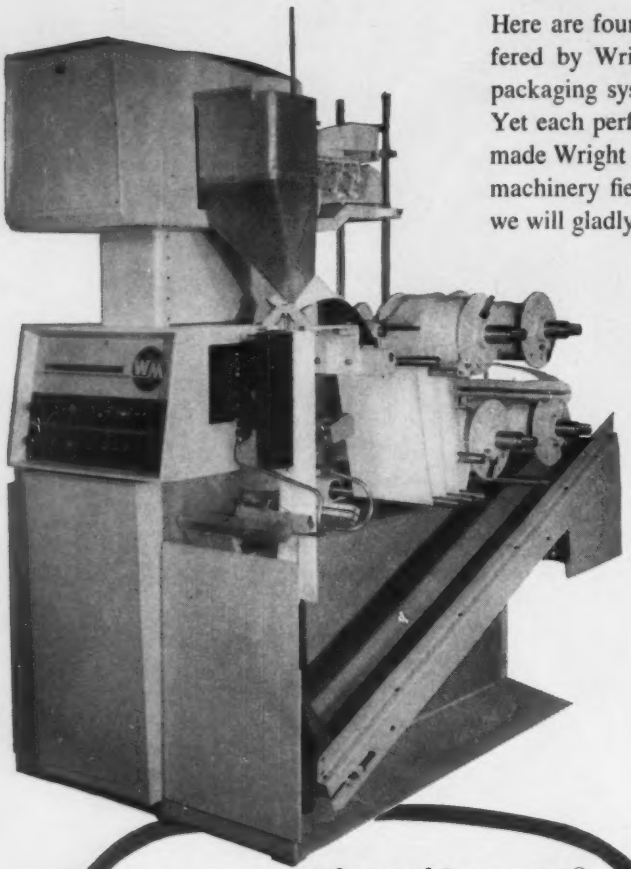
Name_____
Title_____
Company_____
Address_____
City_____ State_____ E

CHAS. PFIZER & CO., INC. • *Chemical Sales Division* • 630 FLUSHING AVENUE, BROOKLYN 6, N. Y.

Branch Offices: Clifton, New Jersey • Chicago, Illinois • San Francisco, California • Vernon, California • Atlanta, Georgia • Dallas, Texas • Montreal, Canada

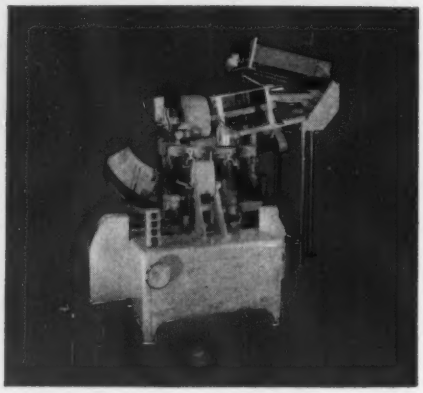
WHAT DEGREE OF AUTOMATION SUITS YOUR PACKAGING LINES? . . .

Here are four examples of various degrees of automation offered by Wright Machinery. They range from a complete packaging system to a versatile, semi-automatic net weigher. Yet each performs with the precision and reliability that have made Wright equipment a standard of quality in the packaging machinery field since 1893. Tell us your requirements and we will gladly send you descriptive literature.



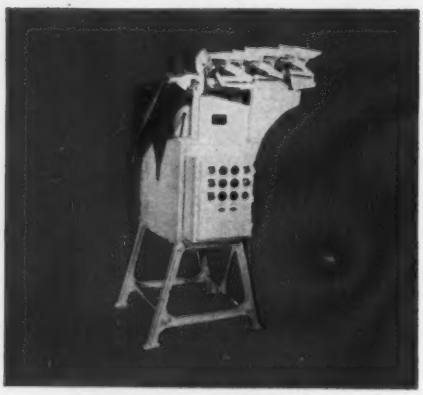
Advanced Bagmaster®

100% automatic, complete packaging system. Makes the bag, electronically weighs and fills the product, and seals the bag. Advance features permit the precision packaging of even such fragile and multi-dimensional products as potato chips.



BAGMASTER® System

Automatically applies pre-formed bags, weighs and fills, and transfers to the sealer. Tested and proven in installations from coast to coast.



HY-TRA-LEC® Weigher

Rugged net weigher available in automatic or semi-automatic models for packaging dry products in any type container.

WRIGHT JUNIOR Weigher

Versatile, semi-automatic net weigher for the manufacturer whose packaging line must handle a wide variety of products and sizes. Only minutes to make change-overs.

WRIGHT MACHINERY COMPANY

DIVISION OF SPERRY RAND CORPORATION

DURHAM, NORTH CAROLINA

DISTRICT OFFICES: Ridgefield, N. J., LaGrange, Ill., Dallas, Texas, San Francisco, Calif., Durham, N. C.

eyed plates (photo) we can tell which lines are open or closed—line at left is open, other three are closed.

Plates are designed with three bolt-holes, two marginal slots, and a center hole the size of pipe's inside diameter. Two bolts of pipe connection go through the holes, two through the slots. To adjust a plate (open or close) two bolts are removed and those through the slots loosened. After sliding plate to its new position, bolts are replaced through holes and those through slots tightened.—*Henry Maas, Maintenance & Eng. Sup't., Rochester Dairy Cooperative, Rochester, Minn.*

Floor Section Easily Removed

Providing a 6 ft. 1 in. dia. hole in the 11½ in. thick reinforced concrete floor of a Minneapolis food plant without creating an unsanitary condition or disrupting operations was the problem confronting management. Hole was necessary for installation of vac air cleaning system.

After a thorough survey, a local contractor decided on the diamond drilling technique. Any other method would have required a complete shutdown and expensive clean-up afterwards.

The huge 2 ton core had to be firmly supported during drilling, then lowered safely to the floor below. To do this, the contractor installed an overhead pipe and timber rig with a block and tackle. A hole was drilled in center of core area and a chain passed through and looped around a 4x4 timber, then fastened to the supporting rig. A tarpaulin was suspended below to catch debris.

Using a diamond drilling machine and playing a constant stream of water at point of drilling, the actual cutting was easy. Running at 350 rpm., the drill cut 66 overlapping 3-4 in. holes to make edges of core. Actual drilling time was 8 min. per hole.

Entire job was finished in 24 working hr., and hole was ready for installation of the tank in three days.—*Truco Masonry Drilling Div., Wheel Trueing Tool Co., Detroit.*

PRACTICAL TIPS

Instead of mats at entrances, stainless grilles built into flooring with drain pans beneath will keep snow, rain and mud from being tracked into office or plant building.

SPROUT-WALDRON SW Pointers

for Mixing and Blending • Size Reduction • Pelleting and Densifying • Size Classification • Bulk Materials Handling

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Pa.

28' Sprout-Waldron pneumatic bulk flour truck designed to speed local deliveries.

BULK TRAILER FOR NEW JERSEY FLOUR MILLS

Delivery of a modern 1,225 cu. ft. capacity bulk body pneumatic flour handling trailer to New Jersey Flour Mills Company, Clifton, New Jersey highlights the trend to bulk handling in this industry.

The streamlined 28' bulk truck body is of single compartment construction, having seven 24"x24" inlet doors. Twin screw conveyors in the bottom of the body are driven through a positive infinite variable speed control unit. The system is self-contained and designed for efficient and economical loading and unloading at high speeds.

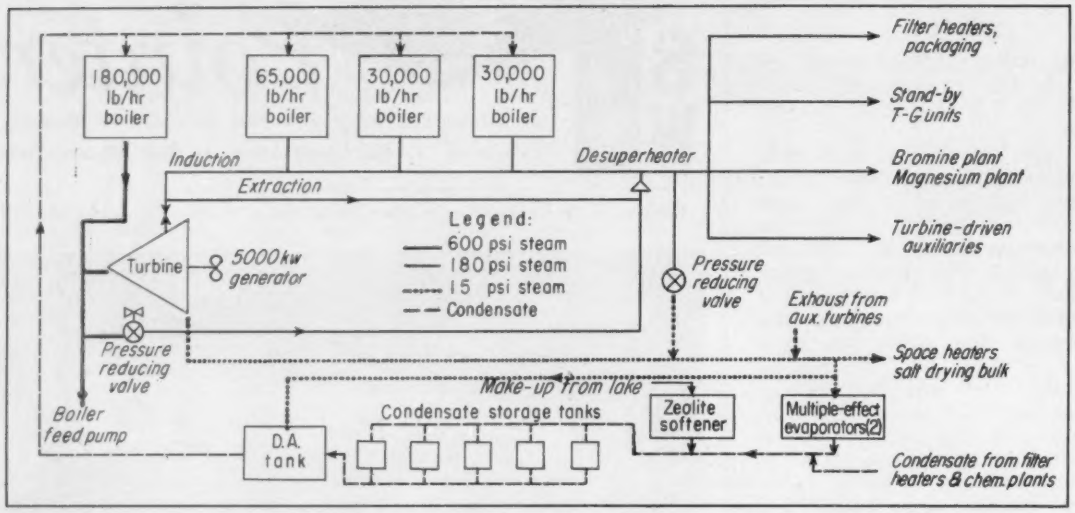
Lawrence F. Orbe, Jr., President of New Jersey Flour Mills Company, stated that, "bulk flour is better flour; not only from the standpoint of product cleanliness and good housekeeping, but in its improved baking qualities as well; a fact proved by leading cereal chemists. Economies to the baking industry through the use of bulk flour are also substantial. It is entirely possible that a savings of 30 to 40c/cwt. will develop through this modern method of loading out and transporting flour from mill to bakery."

For more information on Sprout – Waldron pneumatic bulk trucks, write for Bulletin 203.

PRACTICAL PNEUMATIC CONVEYOR DESIGN

A technical article by the Chief Engineer of our Materials Handling Division. It tells how to select, operate and maintain pneumatic systems for transporting dry, bulk materials. Positive, negative and combination systems are illustrated and described. Ask for Bulletin I-28.

FOP/102



NEW SYSTEM employs 600 psi. steam for turbo-generator and boiler feed pump, 180 and 15 psi. exhaust for processing.

Cost-squeeze eased by—

Modernizing the Power Plant

Midwest salt producer ups steam pressure, installs turbo-generator to efficiently meet rising power and steam demands

EFFICIENT generation and utilization of steam and electricity can be just as important as the continuous up-dating of your processing operations.

▶A case in point is production of salt from NaCl brine, where large quantities of both electricity and steam are required. Here, employment of steam turbines to generate power, then using exhaust steam for processing, are essential to turning a profit.

With this in mind, Morton Salt Co., in 1957 after a 10-yr. study, modernized the power plant at its Manistee, Mich., facility. Key unit was a 5,000 kw. steam turbine-generator (Allis-Chalmers). The non-condensing turbine (photo) is equipped for automatic extraction or induction of 180 psig. steam, exhausting at 15 psig. back pressure. Inlet steam conditions are 600 psig. at 750F. The 3,600 rpm. turbine drives an air-cooled generator rated 6,250 kva., 4,160v.

Old-System Inadequate

Previous equipment comprised a 500-kw. non-condensing turbine and two 1,500-kw. condensing automatic extraction units all operated on 180 psig. steam, exhausting at 15 psig. back pressure. Power was generated at 440v. and distributed through open copper bus bars and oil-operated switches.

Steam generating equipment consisted of one 65,000 and four 30,000 lb./hr. boilers operating at 180 psig., 500F. Most of this machinery was in good order but its capacity wasn't ample to take care of the steadily increasing plant production.

In addition, electrical requirements were outstripping need for 15 psig. steam. This led to the recommendation that a higher pressure steam system be installed. Major aims were: Savings in fuel, and reduction of operating, maintenance, and labor costs. Fact that most of the necessary auxiliary equipment was in existence made the proposal even more attractive.

Where process steam is required at more than one pressure, as is the case of Manistee, non-condensing automatic extraction turbines can be favorably employed.

These units often operate at thermal efficiencies greater than 75%, compared to about 35% for a very efficient, large central station with condensing turbines. This high efficiency is attainable because credit is allowed for useful heat in exhaust and extraction lines.

Ample Boiler Capacity

In 1949 the company had purchased a 4-drum bent-tube Sterling type boiler. It was the first semi-outdoor type installed in latitudes as far north as Manistee. The unit has handled load swings up to 80,000lb./hr. at an average efficiency of 85%.

Until 1957 the boiler had been operating at 180 psig., 500F. serving the three original steam turbine-gen-

ROBERT KIEFER and WARNER G. FRAZIER

Respectively, Supt. Power Plant Morton Salt Co., Manistee, Mich., and Steam Turbine Dept., Allis-Chalmers Mfg. Co., Milwaukee

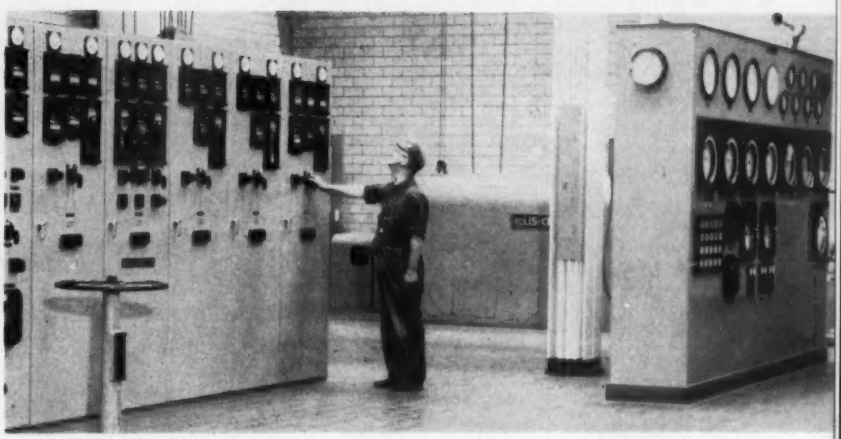
erator units. Prior to installation of the new 5,000-kw unit, however, economizer and superheater tubes were added and the steam pressure raised to 600 psig. at 750F.

Two of the old 30,000 lb. boilers were removed to make room for plant extension and permit new turbine to be placed near high pressure boiler. Most of the original machinery remained intact, with the three older generators relegated to stand-by duty (see drawing.)

The new turbine is equipped for either automatic extraction or induction of 180 psig. steam. When 600 psig. steam is not available, as during annual boiler overhaul, steam from three stand-by units is inducted into the turbine through extraction valve and exhausted, as usual, at 15 psig.

A by-pass is provided from the 180 psig. stage to the 600 psig. stage to allow for uniform heating and cooling of unit. This arrangement permits electric power to be generated most efficiently at all times.

In addition to powering main turbine-generator unit, steam at boiler pressure is supplied to turbine-driven boiler feed pump. Exhaust from this and other steam auxiliaries is led to 15 psig. header.



TO MAKE ROOM for new turbo-generator (rear) and auxiliary equipment, two older boilers were removed from power plant. Chlorextol liquid-filled transformer and related switchgear reduce voltage from 4,160 to 440 for small motors, etc.

Pans Use 15 Psi. Steam

As much as 90,000 lb./hr. of 15 psig. steam is used by the vacuum pans for salt evaporation. Steam flow from turbine exhaust is combined with that from 180 psig. line through a pressure reducing valve.

All salt produced at Manistee is made by the vacuum pan process (as opposed to the grainer method). In this process, salt is crystallized from brine in multiple-effect evaporators.

Vacuum pan facilities consist of seven large (about 60 ft. high) pans arranged to make one triple and one quadruple effect evaporator. Steam is introduced into a belt around the first pan (an elaborate tube-type heat exchanger) and used to heat the brine. Vapor from each effect passes to steam belt of next one. Vapor from pans is fed to barometric plate condenser. Condensate from all but last effects is used for boilers.

Slurry from evaporators is washed with fresh brine to remove calcium sulfate, then fed to a rotary vacuum filter. From here the salt, now in cake form, moves via conveyor belt to rotary dryers, then is screened, blended, and graded.

About 2,450 lb. of steam are required for each ton of salt produced in triple-effect evaporator, 1,950 lb. for the quadruple-effect unit. The 15 psig. steam is also used for space heating and for drying bulk salt.

In addition to its salt-making facilities, the plant has an installation for processing natural brine found near the various salt beds.

These chemical processes are the largest users of 180 psig. steam. Smaller amounts are employed for turbine-driven power plant auxiliaries and in the vacuum filter heating and drying of the salt slurry.

Balanced Steam and Power

A look at some typical steam flows for the plant cycle gives an idea of the balance between steam for processes and electric power:

Assuming the boiler is generating 130,000 lb./hr., approximately 85,000 lb. might be supplied to the turbine, 40,000 lb. to the 600 psig. pressure reducing station, and the remaining 5,000 lb. to the boiler feed pump. Of the 85,000 lb. furnished the turbine, 35,000 lb. might be extracted at 180 psig., the remaining 50,000 lb. continuing through the latter stages, exhausting at 15 psig.

Under these conditions, electrical output of the generator would be 3,000 kw. If less steam were extracted from the turbine or more put into it, the quantity generated would be increased.

Largest consumers of electricity here are two 350-hp. motors. One drives the induced draft fan, the other powers one of the two 6-stage boiler feed pumps (second is turbine driven). Only other 4,160v. motor is a 250-hp. drive for the vacuum pan filter exhauster.

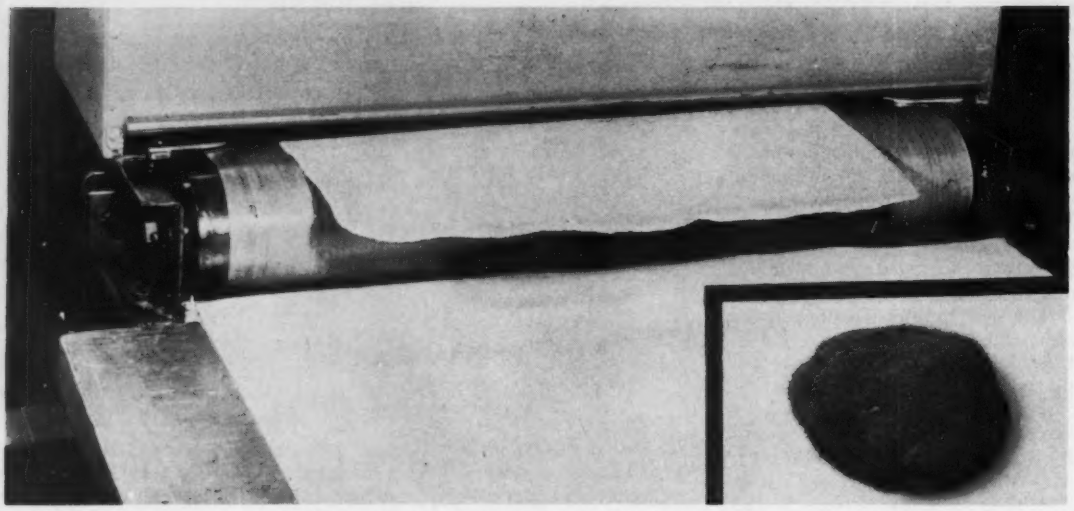
A 2,000-kva. Chlorextol liquid filled transformer, located on operating floor of power plant, supplies 440v. current for other power house auxiliaries. If operation of the stand-by generating equipment were ever necessary, this transformer could be used to step up the 440v. current to 4,160v. for plant use.

Power from the 4,160v. bus is also delivered to two 1,500-kva. load center substations. One, located in the vacuum pan room, supplies 440v. current for salt production. This includes motor drives for brine agitators in evaporators, conveyor belts, hydraulically-operated block press, and many brine and slurry pumps. Second substation furnishes power for operation of the chemical plants, offices, and packaging equipment.

Latter department is a major user of electricity. Here it powers machines for making containers, filling them, and finally casing them for shipment.

The short payoff period for the new equipment, plus savings in fuel and labor costs resulting from installation of the high pressure steam system, add up to reduced operating costs.

Process steam and electrical loads were properly balanced. Therefore, the most economical and efficient solution to the problem of increasing power needs was installation of a non-condensing automatic extraction turbine operating on high-pressure steam. —*End*



FOAM is dried continuously to form porous mat that readily discharges from belt. Following compressing to increase bulk density, product is crumbled into free-flowing powder (inset).

Technique for Improving Instants

HIGHER QUALITY instant food powders—easily reconstituted in cold water—are prepared by a process newly developed at WURDD.

Here, stable foams are made by incorporating air or other gases in a liquid concentrate containing a suitable stabilizer.

Foam is air-dried to form an extremely porous sheet or mat which can be compressed without damage, then easily crumbled into a free-flowing powder.

Though applied primarily to tomato paste, powders of high quality have also been made from a sugar-pectin mix, concentrated whole milk, skim milk, coffee, apricot puree, lemonade, pineapple, grape and orange juices, and prune whip.

Numerous Approaches Tried

Advantages of the porous structure have been recognized for many years. If a dried material is in a solid, impermeable mass, and if as is often the case, the reconstituted product is viscous, reconstitution is slow and the material inconvenient to use.

Various techniques have been developed for obtaining a porous structure. It can be accomplished by freeze drying, in which voids are produced by removal of ice. It can also be done by releasing gas from the material by pressure reduction and drying before the foam can collapse, as in puff drying.

Both methods are capable of making excellent dried products that can be readily reconstituted. But they require rather expensive equipment, and their success greatly depends on properties inherent in the starting materials.

The fine foam structure resulting from the new technique (called Foam-mat-drying) is unique. It persists through compression, so that instant reconstitution can be combined with high bulk density.

Foam-mat dried tomato powder shows a lower moisture content than the spray dried product when in equilibrium with air of the same relative humidity. And at the same moisture content, it shows less tendency to cake than other similar powders.

In order to produce a satisfactory foam, the concentrate must possess a minimum consistency for any particular proportion of foaming agent. It is the physical consistency rather than solids content that is important. Tomato paste has been processed satisfactorily at 25% solids and up, milk at 36%, and orange at 40%, using normal quantities of foaming agent. Conventional evaporative methods can be used.

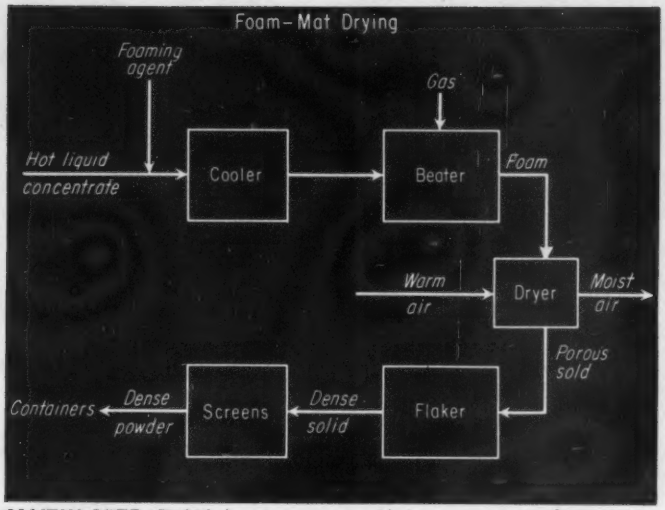
Edible stabilizers that have been found suitable include egg albumin, fatty acid monoglycerides, mixtures of mono- and diglycerides, and fatty acid esters of sucrose. They are used to the extent of about 1% of dry solids in the product.

Monoglycerides were employed for milk and orange juice. Coffee was stabilized with sucrose ester, and prune whip required none since egg albumin was one of the ingredients. Incidentally, the prune mixture could be whipped after reconstitution, since Foam-mat drying does not destroy whipping properties of egg albumin.

After adding the stabilizer, concentrate is cooled to produce necessary consistency. Foam is then generated by whipping the mixture in air or inert gas. Amount of gas incorporated is controlled by adjustment of stabilizer and whipping

A. I. MORGAN, JR., L. F. GINNETTE, J. M. RANDALL, and R. P. GRAHAM

Western Regional Research Laboratory, Albany, Calif. (Photos by R. M. Reeve & J. T. Allison)



IN NEW OPERATION, foaming agent is added to concentrate, then mixture is whipped and fed to dryer. Dried foam is screened and compressed.

New foam-drying method enables production of low-moisture, high bulk density, easily reconstituted powders

time. Density of foam and initial bulk density of dried product are thus subject to close control.

Foam is spread in a uniform layer on a drying tray or belt. Any cross-flow-type dryer can be used. Drying time depends chiefly on air temperature and thickness of foam layer. Maximum air temperature depends on sensitivity of material to heat damage—stability of foam is not a limiting factor. Properly stabilized foams have been successfully dried at temperatures as high as 190, or as low as 130F.

Detraying and Powdering

Mechanical strength of dried foam can be made such that the mat can be removed intact from a flexible tray liner or belt without a doctor blade. The laboratory model continuous dryer at Albany utilizes a Teflon-coated glass fiber belt. Product detaches as the belt passes back around a 2½ in. dia. pulley at discharge end (see photo).

The dried solid has a specific gravity of 0.2. However, it can be compressed (in the case of tomato) to a cake of bulk sp. gr. 0.8, which can easily be disintegrated to form a powder of 0.6 sp. gr.

Storage tests of Foam-mat dried products are not completed, but there is no evidence that the packaging requirements will differ materially from the same materials dried in other ways. However, products such as tomato or citrus powders may require use of an inert gas.

Foam-mat drying is envisaged as a continuous operation. Our experimental dryer has on several occasions produced tomato powder in uninterrupted operation for an entire day. Since the foam is metered volumetrically onto the trays or belt, uniformity of drying time and thickness of mat depend on close control of foam density.

As previously stated, this is accomplished by regulating proportion of stabilizer in feed mixture and whipping conditions. These are not difficult, but close attention must be paid to them during continuous operation.

Here is the procedure for making tomato powder (other foods are handled in much the same way): A satisfactory stabilizer is a monoglyceride made from hydrogenated lard, an FDA-accepted additive. A dispersion containing 3% monoglyceride in 30 Brix commercial tomato paste is made by heating the materials together to 180F., and passing through a closed mixer. One part of this mixture is added to 14 parts of fresh paste to give a product containing 0.7% monoglyceride on the solids basis.

Mixture is beaten in a household food mixer in air for 4 min., producing a foam having a sp. gr. of about 0.4. Foam was spread on the belt in a ⅛-in. thick layer. First 80% of dryer was set at 160F., last 20% at 120. Total drying time, 65 min.

Final moisture content of dried foam was 2.5%. It was broken by hand into fragments about 1 in. square, placed in the cylinder of a hydraulic press, and compressed at 1,000 psi. for 1 min. Resulting pellet was readily disintegrated to form a free-flowing powder having a bulk sp. gr. of 0.6.

Drying rate is governed primarily by rate of heat transfer to the foam. This is usually the case when a large amount of moisture is to be removed from a material. Rate of evaporation of moisture from tomato foam was about 70% of rate of pure water evaporating with the same temperature difference.

Once in the dryer, the foam assumed a fairly constant temperature determined by the relative magnitudes of the resistances to heat and mass transfer.

Because mass transfer resistance for a foam is greater than for a fully wetted surface, the foam temperature exceeded the wet-bulb temperature. Result was to decrease rate of evaporation of tomato foam to about 30% of rate for pure water in the same environment.

The preceding data permit estimation of the effects of air temperature, humidity, and other variables on the throughput of the dryer. Other foams will dry at somewhat different rates.

References

Clark, N. O., *A Study of Mechanically Produced Foams.* H. M. Stationery Office, London, 1947.

Ginnette, L. F., Graham, R. P., and Morgan, A. I., "Freeze Drying Rates," *Proc. 5th Symposium,* American Vacuum Soc.

Kaufman, V. F., Wong, F. F., Taylor, D. H., and Talburt, W. F., "Problems in the Production of Tomato Juice Powder by Vacuum," *Food Tech.* 9, 120, 1955.

Miers, J. C., Wong, F. F., Harris, J. G., Dietrich, W. C., "Factors Affecting Storage Stability of Spray Dried Tomato Powders," *Food Tech.* 12, 542, 1958.

Mink, L. D., U. S. Patents Nos. 2,183,516 and 2,200,963, Dec. 12, 1939, May 14, 1940.

Strashun, S. I., and Talburt, W. F., "Puffed Powder from Juice" Food Eng. 25, 3, 59, 1953.

Wong, F. F., Dietrich, W. C., Harris, J. G., and Lindquist, F. E., "Effect of Temperature and Moisture on Storage Stability of Vacuum-Dried Tomato Powder." *Food Tech.* 10, 96, 1956.

Your Customers' Delight Made from Pre-packaged Dry-Mix!

Keltone® stabilized chiffon or meringue fillings are so luscious, so light, so easy-to-make with cold water—in just minutes! What texture Keltone® gives pie fillings! So smooth, so creamy, they fairly float on your customers' fork. Pies stay fresher, longer!

Whatever your product, packaged dry mix or beverage, emulsion or suspension, sauce or syrup, there's a Kelco algin colloid to provide important benefits. At your service, too, are our highly qualified food technicians, ready to give individual attention to your problems.

Yours on request: Free samples of Kelco algin , and Technical data describing properties, advantages and uses in *your* application. Write without obligation to your nearest Kelco regional office.

products of Kelco Company

Better Livestock Profits Packers

And behind the new quality and economy are salient advances in nutritional feeding—with high-level antibiotic rations curbing diseases, low-level ones boosting growth, and tranquilizers upping weights

A QUIET REVOLUTION in the feeding and treating of livestock is bringing great benefits to meat packers and poultry processors.

The spotlight was turned on the new strides at Chas. Pfizer & Co.'s recent 7th Annual Research Conference in Terre Haute, Ind. Attending scientists particularly noted that the progress has been won despite the last quarter century's 50% drop in farm population and coincident 35% jump in general population with attendant 50% rise in consumption of animal foods.

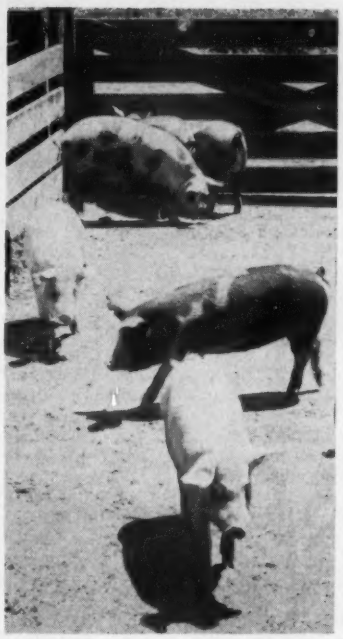
Climbing demand sharpened the focus on ways to up output of meat, poultry, eggs, and milk. Thus, breeding has been improved for better production, disease control has been newly accented, and farm mechanization has been pushed.

And a most vital factor has been the significant improvements in nutritive values of manufactured feeds. These have brought heavier, healthier hogs and cattle. Further, the animals are grown in shorter time on the same amount of feed, or less. As for poultry, broilers are going to market weeks faster. On many farms, an extra egg is being laid for every four formerly produced. And egg shells are stronger.

Down to Points

One feed additive, the antibiotic Terramycin, was discovered to be a growth stimulant. Back in '35, for example, 15 lb. of feed were expended over 14-15 weeks to produce a 3-lb. broiler. Today, such broilers are market-ready in 8-9 weeks on only half the old amount of feed—for now the birds get antibiotic-supplemented and nutritionally improved rations. Turkeys fed a trace of Terramycin are a pound heavier after 24 weeks.

Beef cattle, fed low levels of Terramycin (75 mg. per head per day), grow about 8% faster. Their feed efficiency (conversion of feed into meat) also averages 8% higher. And, in one test, each Terramycin-fed animal enabled the farmer to pocket an extra $3.15.



FASTER, heavier, healthier—and more economically—grow today's pigs. New nutritive values added to their rations get major credit. And packers get major advantages.

Hogs grow 10-20% faster when fed the low-level antibiotic supplement, requiring less feed for the same gain. Calves gain about 20% on antibiotics.

Antibiotic researchers have come up with further interesting, practical findings:

Difficulties inherent in individual handling of animals are being avoided through mass treatment (inclusion of a relatively high level of Terramycin—500g. per ton—in feed for a limited period). Thus, the versatile antibiotic is controlling over 30 costly diseases.

Among the more troublesome are mastitis of dairy cattle, scours of hogs and calves, and cattle-shipping fever. Last-named has cost U.S. stockmen $25 million annually. Further, bloat (incidence now reduced over 75% by Terramycin) has cost the nation's producers a staggering $40-$45 million a year.

High-level antibiotic feeding is then continued with low-level antibiotic-supplemented rations for faster growth, feed efficiency, improved health, and higher quality meat.

The more recently discovered antibiotic, oleandomycin, has also proved valuable for all farm animals. Test examples: 11% greater growth and 5% improved feed efficiency in lambs with only 2g. of oleandomycin per ton, 7 and 4% for hogs on oleandomycin - Terramycin supplemented ration, 4 and 3% for poultry fed 1-5g. of oleandomycin per ton, and 7 and 7% for cattle.

Enhancing the usefulness of antibiotics in the fight against profit-cutting disease is what is called antibiotic potentiation—increasing antibiotic concentration in blood serum of stock by adjusting certain components in the rations, or using certain feed additives. With chicks, for example, it appears practical to remove dietary calcium sources for several days to secure maximum absorption of Terramycin in the bloodstream to fight disease.

Researches on a new injectable tranquilizer—an imidazole—is reducing shrinkage and shipping fever in cattle. Also, the new tranquilizer, Tran-Q (hydroxyzine), has been included in feed for beef cattle—returning nearly $5 more per head.

"Hormonizing" steers by implanting stilbestrol (or giving it orally in fattening rations) raises nitrogen retention—increasing formation of tissue protein to accelerate meat production. Implanting upped daily gains 19%. Feed efficiency, at the same time, increased 13%.

Feeding both Terramycin and stilbestrol in cattle rations brings even

Pound for a Pound?

That goal of getting a pound of animal meat for each pound of feed is closer.

Already, there's new feeding efficiency in mass production of swine. And good headway is being made with cattle.

Now going on-stream are cattle-range feed mills that automatically proportion ingredients along with new feed supplements. Some are even employing linear programming—calculating least-cost feed formulas by electronic computers, and working in scientific 'specs' for greatest nutrition.

Grandma could get away with it!

Grandma's recipes were a pinch of this and a dibby-dab of that.

That was fine for Grandma. But it won't work in process blending. Here, you need precise control, minute-to-minute accuracy, exact formulations.

And you get just this and more with W&T's Merchen Scale Feeders and Meters. They control or measure feed rates by weight. There's no guess work. You get exactly what you set the equipment for . . . yields are known; quality is controlled.

You can feed any free-flowing solid in batch or continuous blending operations . . . as little as 3 lbs. per minute; as much as 3000.

And you do it with W&T's rugged, compact Merchen equipment—built for performance . . . built to give you profit-making control . . . built to take the "Grandma" out of your process blending.

Interested? Write Dept. M-49.37.

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

CIRCLE 226 ON READER SERVICE CARD

WATER ISN'T CHEAP ENOUGH TO WASTE

W&T controlled chlorination saves water and lowers treatment costs. You get maximum water value and use...even reuse.

Write for details on the new V-notch chlorinators: address Dept. S-137.37

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

faster improvements than when each of these additives are used alone. A test showed average growth up 9% and feed efficiency 6% higher, with the farmer getting $4.19 more per head (compared with use of stilbestrol alone).

Use of animal- and marine-source ingredients in rations to provide certain essential unidentified growth factors (UGF) can be relatively expensive and difficult due to limited quantities of the materials. Accordingly, researchers have turned to the use of a fraction of a percent of a fermentation product (a concentrated source of UGF), following up with a re-balancing of the ration (mainly with more vegetable-source ingredients). Here, cost reductions have ranged from a few cents to $8 per ton.

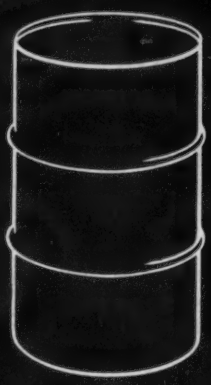
Practical feeds of the future will afford farmers more efficient use of amino acids for improved scientific feeding of poultry and livestock. Economies are bound to result from improved application of such critical aminos as lysine and methionine in tomorrow's feeds. New research findings and lower market prices will broaden the use of these protein builders.

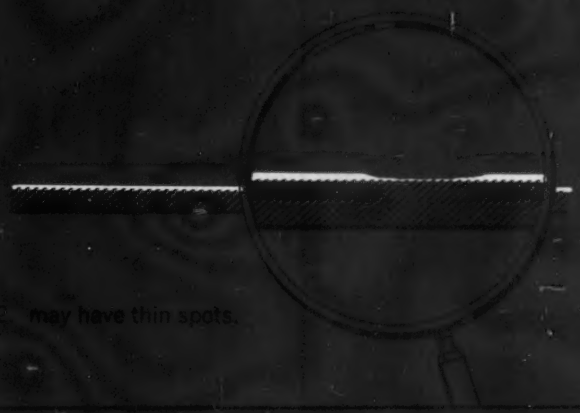
Where corn and soybean oil meal are in abundance, major commercial interest lies in use of methonine in broiler rations and both lysine and methionine for turkey feeding. Where soybean oil meal isn't available for feed manufacture, lysine is the amino most likely to be insufficient for normal growth and development.

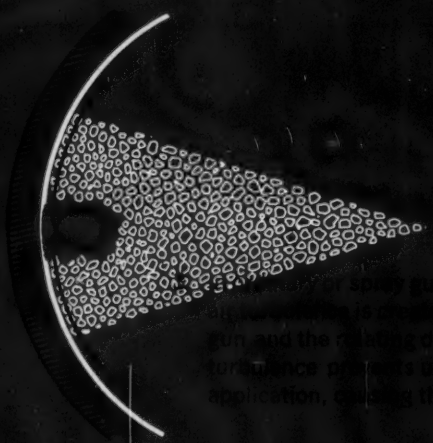
Selenium (known to be toxic at 5-10 ppm.) has now been found beneficial as a disease preventive when only a fraction of a ppm. is employed.—*FE Staff*

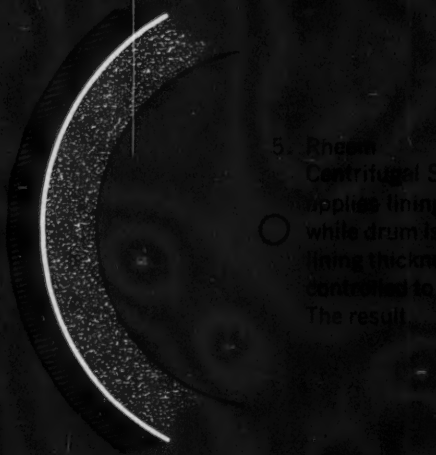
CIRCLE 90 ON READER SERVICE CARD

CIRCLE 91 ON READER SERVICE CARD→









NO THIN SPOTS

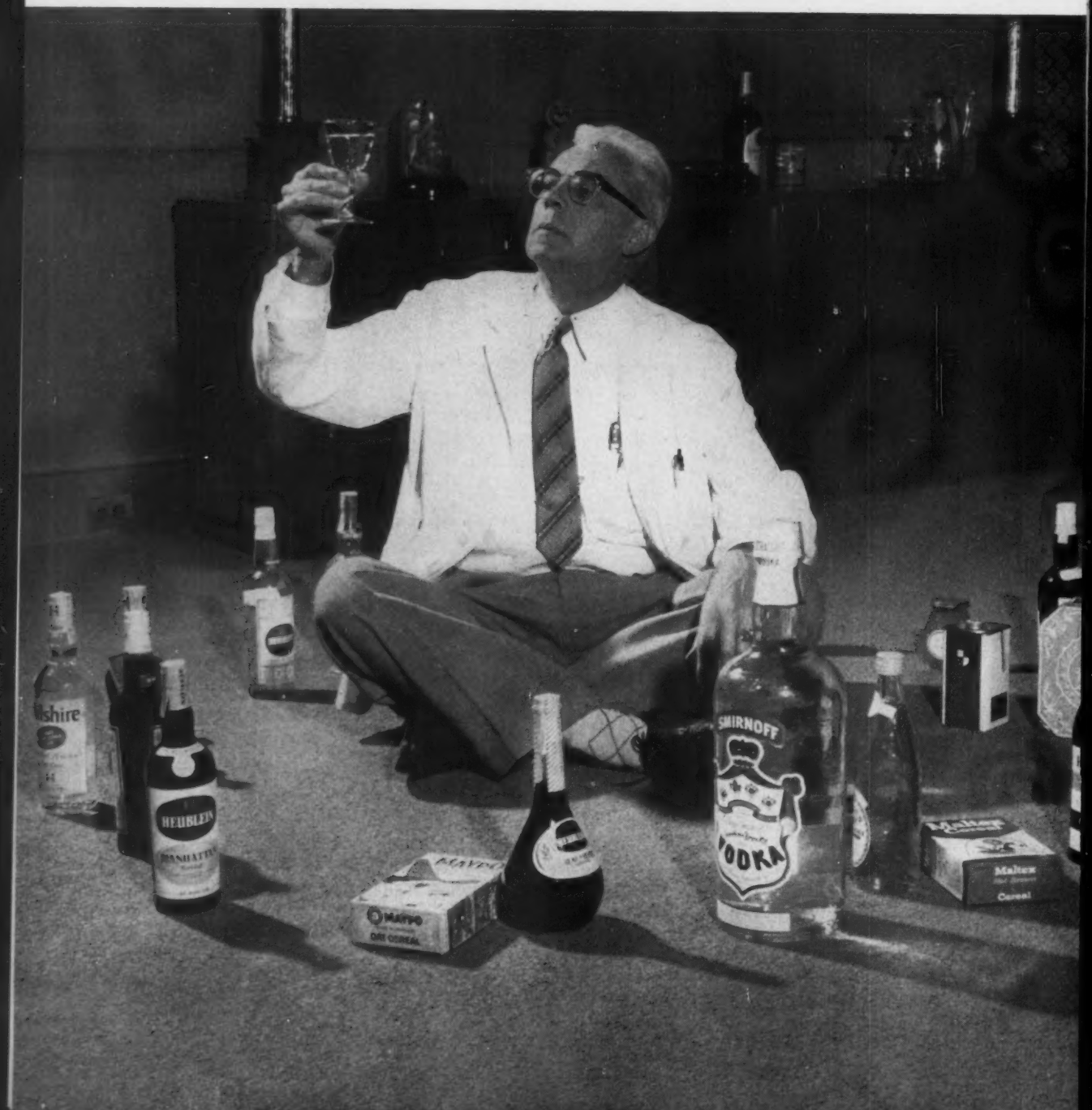
In drums lined by

RHEEM CENTRIFUGAL SPRAY

And that's not all. For more than three years, Rheem Centrifugal Spray has been delivering lined drums free of pinholes, blisters, globs or skips. Air turbulence is eliminated. Human error is eliminated. Linings are cured by unique Rheem Vertical Curing in three stage, high temperature ovens. For more information, or help in developing a lining for a problem product, write the world's largest manufacturer of steel shipping containers at 1701 West Edgar Road, Linden, New Jersey. Plants across the country . . . Chicago, Houston, Linden, New Orleans, Richmond, Calif.; South Gate, Calif.; Tacoma. For other sales offices see the Yellow Pages.

Rheem

Meet "Doc" Rehm... his job is a dream



"Eat, drink and be merry!" might well paraphrase the work of Dr. John B. Rehm, Director of Research & Development for Heublein, Inc. of Hartford, Conn.

His company's diversified lines extend from breakfast through the cocktail hour. Currently he's involved with such fascinating projects as new specialty soups, a new "Sizzl-Spray" barbecue sauce, instant "Maypo" cereal, a new aerosol maple syrup, a new continuous process for the famous "A-1 Sauce".

"Doc" Rehm's special responsibility is *Research & Development*. His primary concerns are laboratory testing, processing, equipment and machinery ... from baking for cereal, to distillation for liquors, to asceptic canning for soups. But you can't park a man in an isolation booth today, and especially not this man. His natural, related interests carry him into plant engineering and production, quality control, packaging and marketing.

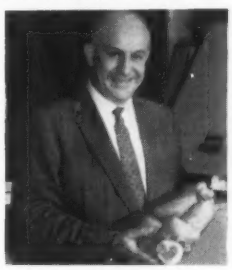
This, you can be sure, is a "whole man". So, too, many of his able associates at Hartford, and in Heublein's modern plants at Burlington, Vt. and Menlo Park, Cal. You can't nail them down by title. Nor pinpoint them on an organization chart. They write their own definition by an inquisitive state of mind, broad-gauge intelligence, and an unrelenting pursuit of better management in manufacturing, packaging and marketing.

Where do you find this brand of food management man? Why, reading FOOD Engineering, of course ... *the complete magazine for the whole man.*

Meet some more "whole men" who read FOOD Engineering ...

A. D. Redmond
General Manager
Pet Dairy Products Co.
Knoxville, Tenn.

William C. Durkee
Marketing Vice-President
Pepsi Cola Company
New York, N. Y.



Minos Asproyerakas
Vice-Pres., Chief Engineer
National Baking Company
Chicago, Ill.

Jeno Paulucci
President
Chun King & Associated Co.
Duluth, Minn.

FOOD ENGINEERING

For Better Management in Manufacturing, Packaging and Marketing

A McGraw-Hill Publication, 330 W. 42d St., New York 36, N. Y.

What you should know about

Is your box a delivery boy

There's a whale of a difference. It usually shows up on the sales charts.

Did you know, for example, that some products' sales have increased substantially *after* their containers were redesigned *visually?* And consider this: A single corrugated box, in an average service lifetime, can meet and influence hundreds of people. Since you've paid for this valuable display space, why not make the most of it?

Plant . . . to point-of-purchase

Colorfully printed corrugated boxes work hard for you in dozens of ways. You can use them to promote your brand name—create a "personality" for your product—add point-of-sale impact. Your designs can tie in with special and seasonal promotions and events —or your advertising. They can help develop dealer preference by speeding identification, simplifying inventory control. Even on factory warehouse shelves good-looking boxes do an important in-plant merchandising job.

Choosing the design

The type of design and color to use will be governed by the specific marketing needs and the product itself. Is it an industrial . . . a staple . . . a luxury? Should the mood be

design and printing of Union boxes

...or a traveling salesman?

gay . . . warm . . . dignified? Is it desirable that the design be adaptable to family packaging?

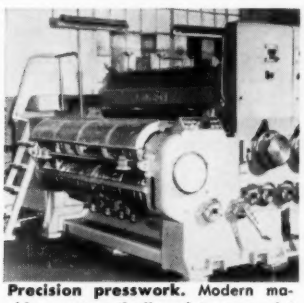
Union's Package Design Department will be glad to analyze each of these factors for you, help you take maximum advantage of the many merchandising opportunities your container offers.

Making the right impression

How well your box design succeeds as a salesman depends largely on how it is reproduced. And printing on corrugated is an exacting science. Roll pressures, for example, must be light enough not to damage or weaken corrugations...yet heavy enough to insure clear, crisp impressions that will stand up (and stand out) even under the severest handling and shipping hazards.

The tools for the job are critical too. Today, flexible printing plates have been perfected so that they can be tailored to the specific job to be done. There are new moisture-set and oil-base inks to choose from as well as new precision machines for the actual printing. When these developments are teamed with the bright, smooth surface of Union containerboard the result is a corrugated box that gives you the best in protection for your products and merchandising for your brand.

Ask to see samples of what has and what can be done. Union's artists and pressmen have produced outstanding designs for some of the country's largest and most discriminating box users. Their services and talents are at your disposal.



Precision presswork. Modern machines automatically print, score, slot and stack box blanks — in one fast operation.

Hardworking designs quickly identify contents including brand, size, count, code number.

An experienced art staff is at your service. Specially trained to get the most out of corrugated printing, they can help you achieve maximum merchandising impact with your box.

Write for new informative booklet, "Printing of Corrugated Boxes."

union camp

UNION BOXES

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga.; Trenton, N.J.; Chicago, Ill.; Lakeland, Fla.*

Sales Offices: *Eastern Division — 1400 E. State Street, Trenton, N.J.*
Southern Division — P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division — 4545 W. Palmer, Chicago, Ill.

How to beat the high cost of temperature control

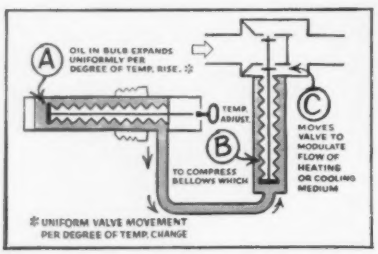
The practical approach to temperature control

By John W. Ritter, Test Engineer, SARCO Company, Inc.

Precise temperature regulation is essential in many processing operations, not only for quality control, but for maintenance of output as well.

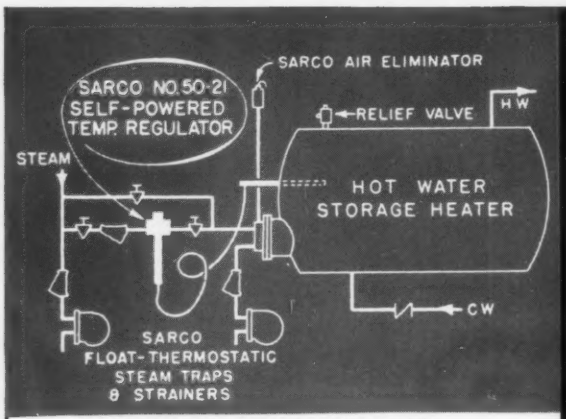
Manual temperature control is unsatisfactory because of the possibility of spoilage and loss of quality control which can result from irregular or indifferent hand regulation.

Automatic controls are available in a wide variety, including pneumatic, electronic, and self-powered. Pneumatic and electronic controls are relatively expensive to purchase and install, and may require frequent maintenance. However, in most applications, control requirements can be achieved very successfully by the use of relatively simple, economical Sarco Self-powered Regulators.


A
OIL IN BULB EXPANDS UNIFORMLY PER DEGREE OF TEMP. RISE. *
TEMP. ADJUST
B
TO COMPRESS BELLOWS WHICH
C
MOVES VALVE TO MODULATE FLOW OF HEATING OR COOLING MEDIUM
* UNIFORM VALVE MOVEMENT PER DEGREE OF TEMP. CHANGE

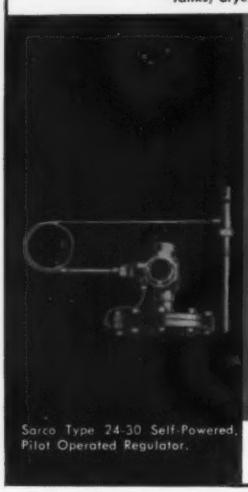
This drawing shows simplicity of operation of the Sarco 50-21 Temperature Regulator, which consists of a thermostat, capillary tubing, and a valve.

Sarco controls, like the 50-21 and the 24-30, have the required degree of sensitivity and dependability, combined with the ruggedness inherent in the sealed capillary tube construction. Because these Sarco controls do not depend on external power, such as electricity or compressed air, they have established long records of sustained, reliable operation. They are an economical and practical solution to the problem of maintaining continuous watchdog duty over processing temperatures.

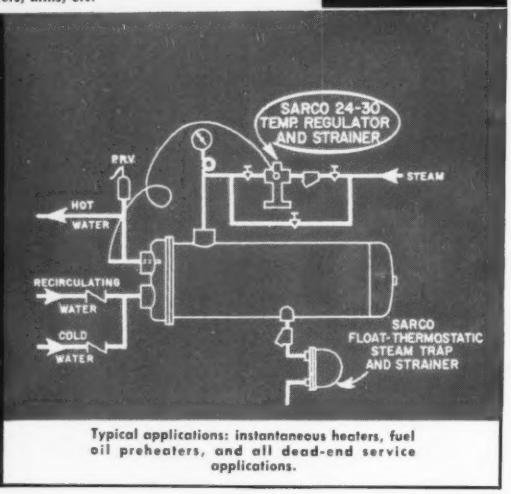


Typical applications: hot water storage heaters, shell and tube heat exchangers, condensers, oil storage tanks, dryers, kilns, etc.

Sarco Type 50-21 Self-Powered Regulator.



Sarco Type 24-30 Self-Powered, Pilot Operated Regulator.



Typical applications: instantaneous heaters, fuel oil preheaters, and all dead-end service applications.

Self-powered automatic temperature regulators by SARCO . . .

have these 5 marked advantages: No compressed air or electrical wiring required. No delicate mechanisms to adjust or maintain. No packing glands to stick or require maintenance. No shutdown during power failure. No specialized maintenance required.

Sarco Self-Powered Controls are self-contained and can be installed by any pipe fitter. They are so reasonable in cost that you can afford Sarco automatic heating controls for every application in your plant. Write for 10-page Sarco Control Bulletin No. 620.

6346-B

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES

H_2O_2 As Whey Preservative

Bacterial growth in cheese whey may be inhibited for as much as 10 days without injury to the product by addition of 0.02% H_2O_2. Then remaining traces of peroxide are easily removed by enzymatic action of catalase. This leaves the whey susceptible to microbiological attack.

Experiments with grossly contaminated cottage cheese whey showed a 97% bacterial kill in 1 hr. after addition of the peroxide (100% kill required 16 hr. exposure to 0.05% H_2O_2 however).—*J. Dairy Science*, 1119-25, July 1959.

Automation Ups Uniformity Of Blue Mold Cheese

Continuous draining, inoculating and hooping of blue mold cheese results in more uniform moisture content and minimizes handling.

The method comprises pumping cut and firmed curd in its whey from vat to rotating perforated drum inclined 12 deg. toward its outlet. Curd drops from drum onto vibrating chute above which is mounted sieve filled with mold powder.

Vibration of chute evenly distributes mold power on curd, which is then discharged into funnel-shaped hopper. This is equipped with quick-acting valve to speed hoop filling.

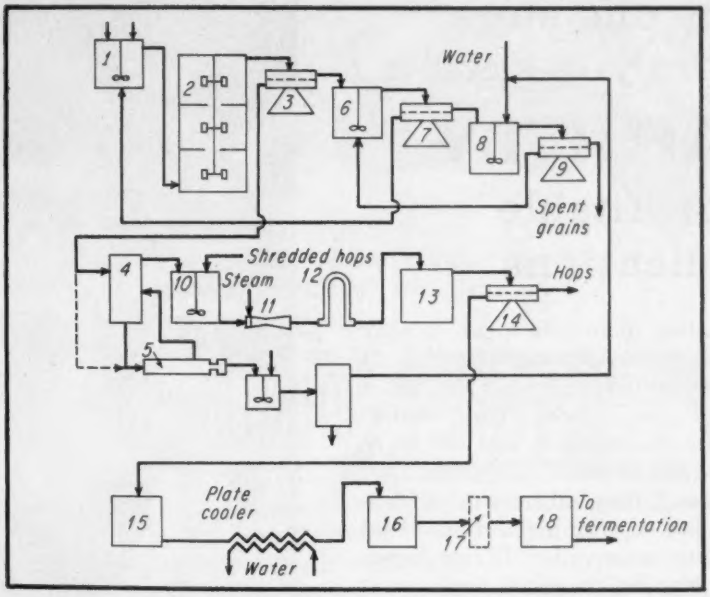
Variation in moisture content of wheels thus produced was approximately ±0.25%. Similar wheels produced manually varied ±1%.—*J. Dairy Science*, 1096-97, June, 1959.

Special Creaming Mixture Improves Cottage Cheese

Flavor and keeping quality of creamed cottage cheese are considerably improved by use of a creaming mixture of high biacetyl content.

Such a mixture was successfully prepared by standardizing 20% fat cream to 12% with an acidified skimmilk culture high in biacetyl. Culture was prepared by inoculating skimmilk with pure *S. citrovorus*. When desired flavor had developed, skim was acidified with citric acid then added to the cream.

Cottage cheese creamed with this mixture had a pleasing flavor initially, and biacetyl increased during an 11-day holding period at 45F.—*J. Dairy Science*, 1045-56, June, 1959.



New Process Makes Wort Continuously

Production of brewer's wort by a continuous method is the object of a recently granted patent.

Process comprises charging weighed quantities of malt and adjuncts to agitator equipped tank (1 in drawing) and, simultaneously, feeding dilute wort to maintain slurry of desired consistency for future steps.

Slurry from (1) enters bottom of multi-compartment mash-tower (2) and moves upward, finally overflowing to rotary vibrating screen (3). Size of tower, number of compartments and temperature of each effect extraction and conversion efficiency.

Liquid from screen (3) is apportioned between sedimentation tank (4) and centrifuge (5). Spent grains drop into wash tank (6) and are mixed with very dilute wort from screen (9). Slurry from (6) goes to screen (7). Wort from (7) is returned to (1), spent grains drop into tank (8) are mixed with hot water. Slurry from here goes to screen (9) which discharges grains to disposal.

Concentrated slurry that collects in bottom of (4) is continuously fed to centrifuge (5). Liquid from (5) is returned to (4), wet solids are slurried in water, allowed to settle in special tank, then clear effluent is returned to tanks (6) and (8).

Clarified wort from top of (4) flows to agitator-equipped surge tank (10) where it is mixed with shredded hops or hops extract. When former is used mixture is heated to 230-300F. at (11), held in tube (12) to complete desired physical and chemical reactions, then discharged to flash cooler tank (13).

Wort is fed to vibrating screen (14) to remove hops, etc., then discharged to surge tank (15) from which it is pumped through cooler to tank (16). From here the wort may go directly to fermentation.—U. S. Patent 2,894,841, July 14, 1959.

QC of Hops and Hopping

Spectrophotometric methods of estimating alpha acids of hops and isohumulones have simplified control of hopping. But degree of utilization of hop bitter substances, boiling of hops, and persistance of isohumulones in final beer still have to be considered.

Determination of utilization of hop alpha acids in both laboratory and plant brews showed that 50% appears in wort as bitter isohumulones, and 26% in beer in primary storage. There is small loss during finishing operations, and final beer has about 22% potential isohumulones that hops could have supplied.

For a bottled beer to have 15 ppm.

Lactose, Edible—pure sugar from milk

Only one sugar offers you such a **VARIETY** of profitable applications

Put Lactose (pure milk sugar) to work for you. It can improve your present products, help you develop new products, cut your ingredient costs. Seldom do you find a material that can do so many things so well.

Lactose, Edible, enhances flavor identity. It is a superior pigment-absorbent and aroma preservative. It aids dispersion of high fat powdered products. It improves browning and caramelization, controls sugar crystallization.

Only Western can supply Lactose, Edible, in the full range of particle sizes required by various food applications. Strict chemical and bacteriological specifications, rigid quality control and years of processing experience assure highest quality.

Take a good look at Lactose. Send for the facts and figures today. For complete information, prices, product samples and bulletins on Lactose, Edible, write our Technical Service, Department 16J (including applications under consideration).

FOREMOST Lactose

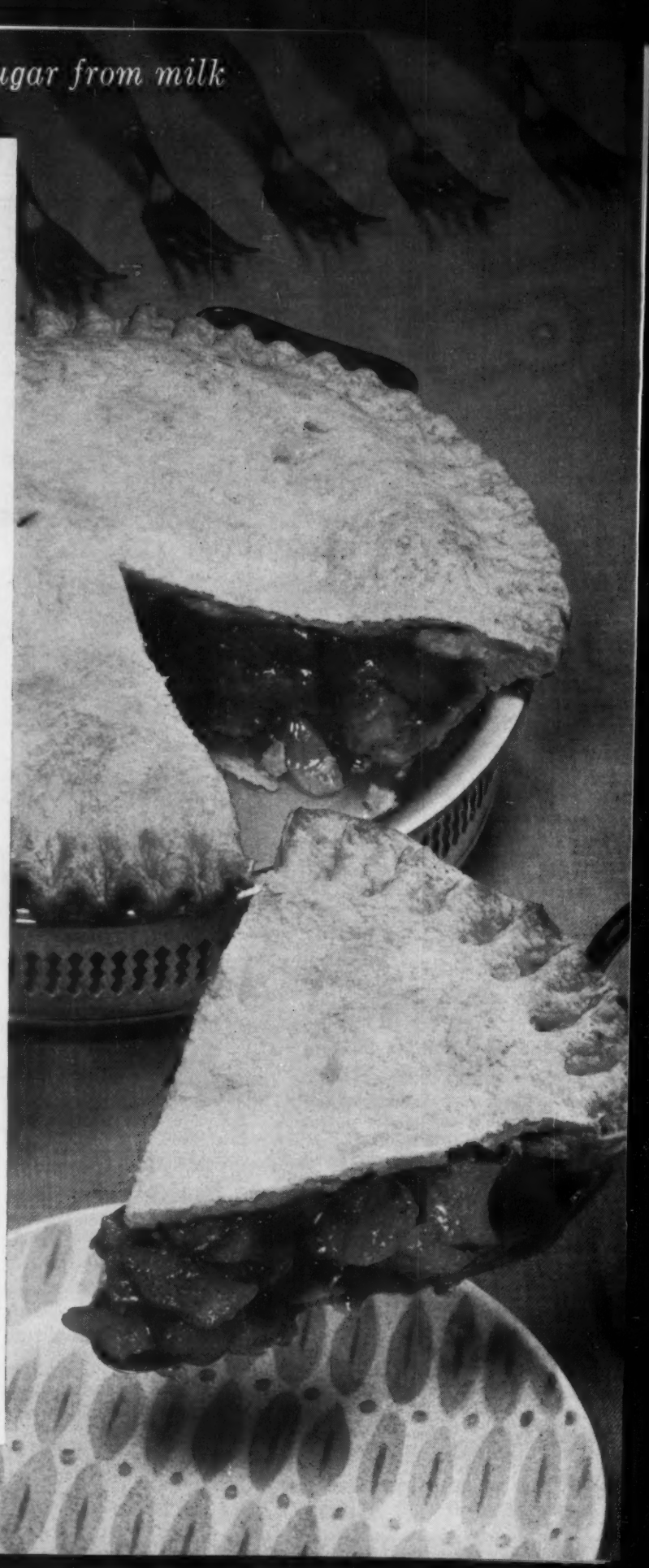
WESTERN CONDENSING COMPANY

Appleton, Wisconsin

World-Wide Supplier of High-Quality Milk Derivatives

Distributed Nationally by

CHEMICAL DEPARTMENT,
McKESSON & ROBBINS, INC.
60 conveniently located warehouses



isohumulones, ruh or primary storage beer should have about 17 ppm., and cooled wort before fermentation, about 32 ppm.—*Paper by H. L. Chere, (Pfeiffer Brewing Co.), ASBC, Montreal, May 1959.*

Flavor Intensity of Beer

Nine beverages were tested for flavor intensity by offering them in pairs to a taste panel accustomed to evaluating beer.

Judges were asked to disregard taste quality and indicate which had the greater impact, that is, the "stronger" taste. Judgments were quite consistent among individuals and combined results arranged the beverages in 6 categories, with whiskey and martinis having the strongest impact or flavor, and chocolate milk the weakest.

When asked to arrange the beverages in order of their flavor strengths, judges did not agree with actual trials, indicating a vague knowledge of the true relative taste intensities. Beer was judged stronger in flavor than tests showed it to be.—*Paper by Baker & Burant (Froedtert Malt Corp), at ASBC, Montreal, May 1959.*

Early Staling of Cakes

Loss of freshness during the first few days of storage is related to changes in physical characteristics of cakes rather than to moisture loss.

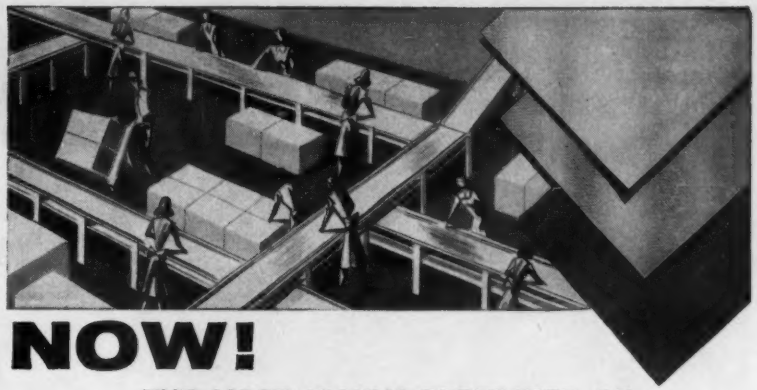
This conclusion is based on a study of the relationship of moisture loss, oxidation, and change of firmness and crumbliness to staling of white and yellow layer cakes.

Oxidative changes decreased the freshness of cakes stored at 70-72F. Canned cakes stored under N_2 to prevent oxidation, and those wrapped in foil to prevent moisture loss staled appreciably during the first few days. During this period the cakes firmed rapidly—½ occurring during first 4 days. Between ¼ and ½ of staling observed by panel in 27-day test occurred within 4 days.—*Cereal Chem., 228-35, May 1959.*

Preheating Temperatures Influence Juice Yields

In the production of tomato juice, important losses are introduced at the following 3 locations: In the washer; on trimming table, and at finishers.

Losses at the first 2 locations are



NOW!

THE MOST HIGHLY PERFECTED OF ALL CONVEYOR BELTING...

GLOBE CHEMIGUM* IMPREGNATED PRESS-CURED KANRY-TEX

* High Acrylonitrile Rubber Latex, — one of the finest in the new field of latex for belting — especially developed for resistance to oil, odor, stain and wear.

THE UNIVERSAL BELT FOR ALL INDUSTRIES

Globe Chemigum Impregnated Kanry-Tex Belting is impervious to fats, oils, greases, alkalies, acids, solvents, juices, moisture and other liquids.

PRESS-CURED

Globe Kanry-Tex is non-porous, easy to clean, odorless, tasteless, non-toxic and non-contaminating.

GLOBE PRESS-CURED KANRY-TEX

is highly resistant to heat, abrasion, wear or color-fading. It maintains stability at zero to 250° F. and has ideal flexibility for small pulley diameters. Special treatment No. 301 is available for sub-zero temperatures.

WHITE, BLACK OR BROWN

in widths up to 60 inches, in 2 to 6 plies. With cleats for incline conveying if desired.

TWENTY YEARS

of research, experience, development and testing by Globe is your assurance of perfection — whatever your conveying problem.

*Chemigum—T. M. The Goodyear Tire & Rubber Co.

WRITE NOW for characteristics and price list.

MANUFACTURERS OF:

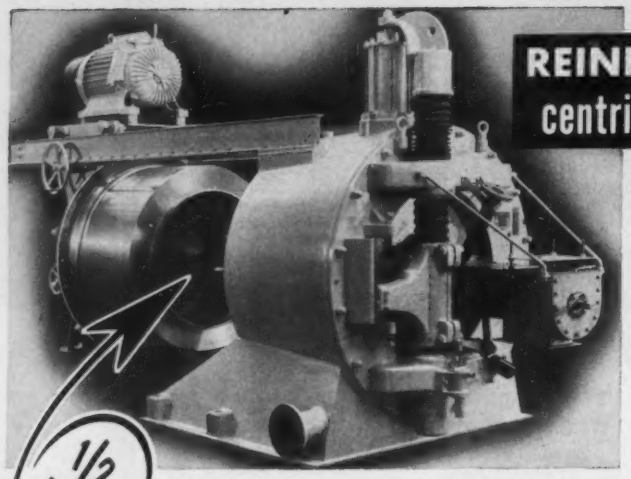
WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING • WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING • ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS • WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES • WEBBINGS • HOISTING SLINGS • BELT DRESSING

GLOBE WOVEN BELTING CO., INC.
1400 CLINTON STREET • BUFFALO 6, NEW YORK

KNOWN FOR QUALITY THE WORLD OVER

←CIRCLE 98 ON READER SERVICE CARD

CIRCLE 99 ON READER SERVICE CARD



That's all the time needed to open, thoroughly clean and inspect, and close this automatic stainless steel Reineveld Horizontal Separator.

This means sanitary operation at all times and at least double the output of any other machine. Yield is higher, too, as solids remain undisturbed after separation until cut-out.

Consult our listing in CEC or write for bulletin 356.

Sold and Serviced by:

HEYL & PATTERSON, inc.

55 FORT PITT BLVD., PITTSBURGH 22, PA.

H&P

CIRCLE 227 ON READER SERVICE CARD

Sticking Problems?

use

SLIPICONE

silicone release agent

ON HAND-IRON SEALING BARS

SLIPICONE® makes sticky spots slick . . . prevents adhesives, packaging materials, foods and food products from sticking where they're not wanted. SLIPICONE keeps equipment clean, cuts downtime and maintenance costs, speeds operations . . . SLIPICONE saves you time and money!

SLIPICONE is nontoxic, won't attack any surface, and is unaffected by temperatures from —40° to 400° F . . . won't gum-up or run-off equipment when heated. Try SLIPICONE, the Dow Corning silicone release agent, now . . . and give your sticking problems the slip!

Just spray or wipe it on: Sold in 12 oz. aerosol cans, 2 and 8 oz. tubes, 10 lb. cans.

Get SLIPICONE from your paper merchant, packaging materials supplier, or write to Dept. 5521a

first in silicones

Dow Corning CORPORATION

MIDLAND, MICHIGAN

Advances in Technology

directly related to quality of raw materials. But those at the finisher are influenced by both preheating temperature and speed of unit.

Temperatures of 140-160F. have been found to give highest yields. They can be further increased by speeding up beater action of finishers and using screens coarser than 0.023 in. Latter gain is offset, however, by appearance of specks in the juice. —*Food Tech.*, 270-2, May 1959.

Light Speedily Downgrades Quality of Film-Pack Peas

When frozen foods are packed in transparent film, handlers must be extremely careful about exposure to light.

In tests conducted by WRRL, two 20w. fluorescent lights were placed 21 in. above 1.5 mil poly bags containing 5-oz. portions of frozen peas, held at two temperatudes—0 and 20F.

Visible changes in color of peas occurred in 4 days at 20F, and in 3 weeks at 0. A pronounced flavor change, making peas unacceptable, occurred within a week at 20. In addition, frost formed more rapidly in packs under lights than those in the dark.—News from WRRL, Albany, Calif.

Automatic Peanut Sampler

Recently developed by USDA's Agr. Marketing Service, a spout-type bulk peanut sampler that has proved more accurate than the conventional hand-scoop is seen finding application for other commodities such as corn and soybeans.

Unit fits near head of a belt and bucket elevator and draws samples at timed intervals as peanuts pour into storage bins. It has only one moving internal part—a deflector that diverts the stream into a sample box. Machine is powered by a ⅓ hp. motor and controlled by a commercially built timer.—*Agr. Marketing*, 7, Aug. 1959.

Correction

In the feature article, "Striking Advances in 'On the Line' Moisture Control" (FE Aug.), the two captions at the top of p. 83 were inadvertently transposed. The first drawing shows the continuous system and the second depicts the electric-signal setup.

Remarkable dispenser assures pin-point accuracy!

New Flocron eliminates costly ingredient loss!

Canners, packers and food processors now using the new Flocron liquid dispenser report ingredient savings up to $1,000 per line. These savings are possible because the Flocron avoids waste inherent in "overflow fill" systems, stops "splash loss" and handles costly ingredients with money-saving speed and accuracy.

The remarkable Flocron is actually a precise electronic system with photoelectric circuits in a sealed unit and a new lever-type photo switch to activate dispensing. It assures high speed accuracy—even on lines handling up to 300 units per minute! Remote electronic controls permit you to "dial" the exact amount of liquid required for various can sizes: Brine . . . hot butter . . . Monosodium Glutamate . . . concentrated syrup . . . ascorbic acid . . . brine and sugar . . . spice oils . . . coloring . . . oil . . . chicken fat . . . flavors . . . medicinal liquids.

Designed for efficient, low cost operation. The Flocron is made of stainless steel and plastic and is constructed to avoid corrosion and lengthy breakdowns that result in costly downtime. There are no valves to stick or clog. The Flocron is easily cleaned by merely flushing the fluid system.

No need to revise production lines. The Flocron can be operated with existing equipment. Scientific Dispensing Company technicians are available in all areas to assist with installation and service problems.

The Flocron liquid dispenser is offered only by the Scientific Dispensing Division of the Morton Salt Company.

Mail coupon today for more information

Name_____
(please print)

Title_____

Company_____

Address_____

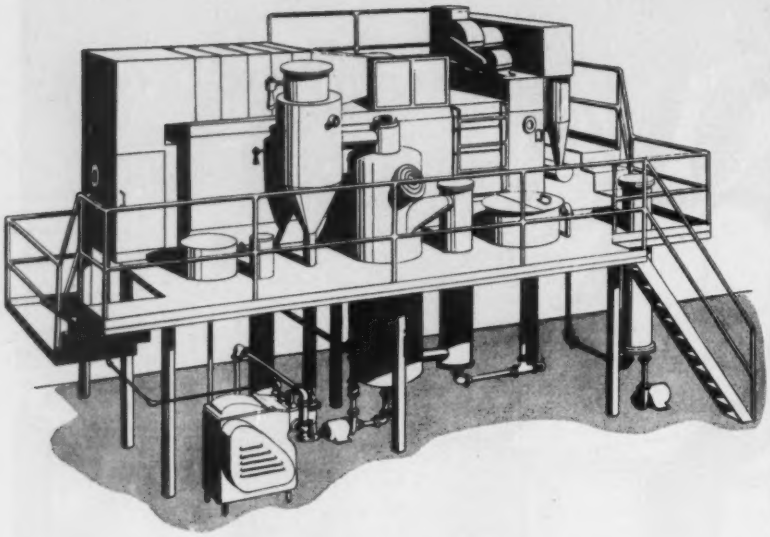
City_____ Zone____ State_____

Scientific Dispensing Company, Division of

MORTON SALT COMPANY

Dept. FE 9, 110 No. Wacker Drive, Chicago 6, Illinois

CIRCLE 101 ON READER SERVICE CARD 101



The BLAW-KNOX MILK DRYING PILOT PLANT WITH CAPACITIES UP TO 175 POUNDS PER HOUR

NOW LARGE DAIRIES CAN RESEARCH SPECIALTY PRODUCTS . . . SMALL DAIRIES CAN SOLVE SEASONAL SURPLUS PROBLEMS

All in one "package" the evaporator and spray dryer are shipped to you complete with milk preheater, storage tank, high concentrate heater, surge tank, high pressure pump, sifter and all inter-connecting sanitary piping. Easy reassembly eliminates field welding. Fitted at factory, shipped to you ready for steam, water and electrical connections. Built to Sanitary Dairy 3-A standards, the "Pilot Plant Package" will handle all types of dairy products, non-fat milk, whole milk, whey, buttermilk, dietetic foods and others. Ask for Bulletin 590 for more details and specifications.

BLAW-KNOX

BLAW-KNOX COMPANY
Dairy Equipment Division
Mora, Minnesota

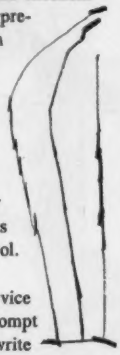
102 CIRCLE 102 ON READER SERVICE CARD

Jefferson Chemical
is your best source for
high purity

U. S. P. PROPYLENE GLYCOL

Most Versatile Polyol
for Use in Foods, Flavors
and Extracts

U. S. PHARMACOPOEIA Grade Propylene Glycol has low toxicity and excellent solvent, hygroscopic and preservative properties which make it preferred in a great variety of food processes. Food flavor, color or emulsion solvent; flavor extractor; humectant in packaged food products . . . these are a few of the proved applications for U.S.P. Propylene Glycol.



For helpful technical service on any application, or prompt delivery-price information, write to Jefferson Chemical Company, Inc., 1121 Walker Ave., P. O. Box 303, Houston 1, Texas.

JEFFERSON CHEMICAL COMPANY, INC.

HOUSTON • NEW YORK • CHICAGO • CLEVELAND
CHARLOTTE • LOS ANGELES

Ethylene and Propylene Oxides, Glycols, Dichlorides • Ethanolamines
Morpholine • Piperazine • Polyethylene Glycols • Nonyl Phenol
SURFONIC® Surface-Active Agents • Ethylene and Propylene Carbonates
Caustic Potash • Caustic Soda • Soda Ash • Sodium Bicarbonate

Essential Chemicals From Hydrocarbon Sources

155

CIRCLE 228 ON READER SERVICE CARD

MEN & COMPANIES

GM, Too . . . General Mills, Inc., has joined firms that view overseas markets with a faster pulse.

It has purchased Latham Foods, Ltd., Cheshire, England—GM's first venture into grocery products business outside North America—and has assigned additional duties as director of international activities to Financial V.-P. Edwin W. Rawlings.

Latter joined GM as a director and v.-p. upon his retirement from U. S. Air Force early this Spring. Significantly, one of jobs targeted for him was to spot companies "suitable for acquisition."

Edwin W. Rawlings

For last 7 yr. of his distinguished 30-yr. military career, 4-Star Gen. Rawlings headed the Air Materiel Command.

David M. Potter

Boon to Processors . . . Franklin Institute will award its famed Edward Longstreth Medal next month to David M. Potter, president of Potter Aeronautical Corp., Union, N. J.

Illustrious former recipients include Thomas A. Edison and Elmer A. Sperry, Jr.

Honor goes to Mr. Potter for his invention of a flowmeter with a rotor that eliminates need for thrust bearings. Result is increased sensitivity and accuracy.

Experimenting on his own time in a friend's home workshop, Mr. Potter developed the instrument initially for the Navy. Food men have snapped it up for its obvious benefits in processing.

Louis Amaducci, who has been in charge of plant operations for Norda Essential Oil & Chemical Co., Inc., Boonton, N. J., has been upped to v.-p.

J. Paul Austin, formerly exec. v.-p., is now president of Coca-Cola Export Corp. He succeeds **Lee Talley,** who has held post in addition to that of presidency of parent Coca-Cola Co.

Paul S. Gerot, president of Pillsbury Co., Minneapolis, has been elected a director of Minneapolis-Honeywell Regulator Co.

Francis A. Gunther, insect toxicologist of U. of Calif., is recipient of 1959 Harvey W. Wiley Award of Assn. of Official Agricultural Chemists. Bestowal particularly honored his development of practical analytical methods for pesticide residues on fruits and vegetables. Dr. A. H. Robertson, president of the association, stated that Dr. Gunther's work "gives regulatory officials and consumers increased assurance as to the safety of their present-day food supply."

Benjamin J. Jarvis, formerly sales v.-p. of R. D. Webb & Co., Inc., is now production v.-p. at firm's Linden, N. J. plant. Another company move has been to make **A. Rolph Evans,** previously in charge of manufacturing, r&d v.-p.

Zeus Soucek will head General Mills' Washington, D. C., office as v.-p., representing firm in contacts with govt. agencies and business organizations.

AO's Goldberg Process Refractometer Prevents Waste . . . Increases Profits

This in-stream Refractometer can be mounted in wall of process vessel, evaporator, vacuum pan, product pipe line or other location where continuous reading is desirable. Quickly determines total soluble solids in turbid and dark-colored concentrates such as jellies, jams, purees, juices and syrups.

1 **Prevents profit loss:** Determines exact endpoint of cooking batch by providing continuous, in-process readings of total solids. Prevents profit loss due to soluble solids "give away" by over concentration.

2 **Prevents product waste:** In-process readings on *hot* product eliminates old-fashioned external sampling with its consequent product waste and time loss. Savings in product alone, in most cases, will pay for the instrument in one season.

3 **Prevents errors:** Since product is always tested in-process, errors due to evaporation, temperature changes or opacity are eliminated. Readings are not affected by viscosity, foam, air bubbles or pulp and there's no need to correct for temperature differences between refractometer and process vessel. Accurate readings can be taken by anyone... no skilled technicians required.

4 **Three Brix ranges available:** 0-25%; 12-72%; 36-82% total soluble solids. Withstands pressure of 40 lbs. and temperatures ranging up to 250°F.

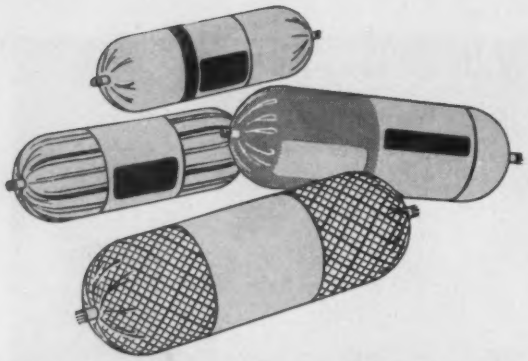
For further information write for Brochure SB10125

AO SPENCER

American Optical Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

CIRCLE 103 ON READER SERVICE CARD 103



YOUR PRODUCT SELLS FASTER IN "CHUB" PACKAGE

Kartridg-Pak's automatic machine makes complete Chub packages in sizes from 4 to 16 oz.

Forms, fills, and closes 1800 packages per hour Continuous — Automatic

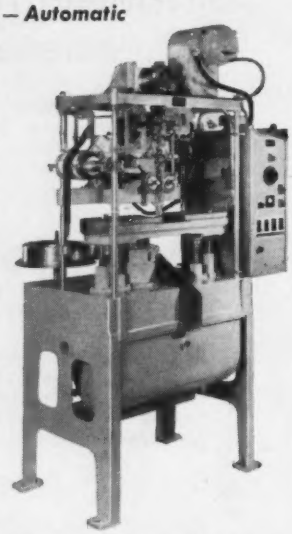
Makes a uniform, attractive package which means more impulse sales—more repeat sales for your product. And it's a convenient package for consumers to use. Gives added protection to your product.

Forms the package from flat roll stock thermoplastic film —saran, polyethylene, and others. Machine automatically closes package ends with wire clips made from roll stock wire.

Printed or plain film can be used. Package identification can be made by use of printed film, or by attaching attractive band labels.

Less total film and less labor are required with this automatic machine which means lower production costs. Flat film results in reduced film costs. Only one operator needed.

Machine accurately meters a semi-viscous product to control weight.



Floor space is saved. Machine is compact. Size 4 ft. wide x 3 ft. deep x 7 ft. high.

Low upkeep and maintenance are assured by the experience of present users.

For further details see Kartridg-Pak Representative

Kartridg-Pak Machine Co.

1241 NORTH SEDGWICK STREET, CHICAGO, ILLINOIS

Kaiser Aluminum & Chemical Corp. simulates home conditions for package testing in modern kitchen of its Chicago lab. Size of firm's packaging r&d center is being doubled for broadened flexible and rigid foil studies.

Industry

Allied Grape Growers will buy stock of **United Vintners, Inc.,** for approximate price of $24 million. Purchase is subject to approval of growers and stockholders of respective organizations. Transaction reportedly will result in "largest grower-producer-marketing co-op of its type in the world." New organization will have assets of over $40 million and annual sales in excess of $50 million.

Borden's has taken a further step in its expanded foreign program with acquisition of **Puerto Rico Dairy, Inc.,** San Juan.

National Fisheries Institute has rejuvenated idea of its former promotion committee that handled fall fish parades, and has shaped it into year-round, permanent "promotional arm," to be known as Fish & Seafood Promotions. Chairman is J. Roy Duggan, **Seapak,** v.-p.

Procter & Gamble Co. has ousted General Motors Corp. as top U. S. corporate advertiser, with '58 outlay of $98,154,000.

Seneca Grape Juice Corp., Dundee, N. Y., will lease and manage **Northern Wayne Cooperative,** Williamson, N. Y., and **Hilton Fruit Cooperative,** Hilton, N. Y.

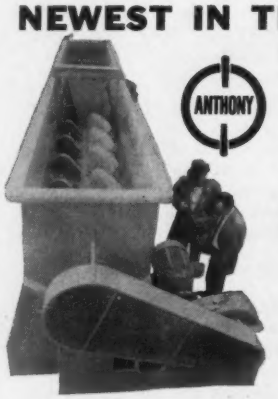
Associated Industries

Manufacturing Chemists' Assn. is sponsoring 12-month research program on taste and odor in public water supplies. Emphasis is on industry's responsibility for pollution control.

Nuclear-Chicago Corp. has set up a new industrial division to meet needs of processors' rapidly growing interest in practical applications of radioisotopes.

St. Regis Paper Co., reporting a banner year for itself, points out that U. S. paper industry total tonnage for first half of '59 showed 13% increase over preceding year.

NEWEST IN THE INDUSTRY



is this giant 34,000 pound sugar mingler which will process 100 tons per hour.

Anthony specializes in engineered continuous mixing applications for all solid and semi-solid food products.

Capacities of our standard mixers range from a few hundred pounds per hour to as much as one hundred tons per hour.

Write or phone for more complete information to:

WILLIAM A. ANTHONY ENGINEERING COMPANY

9716 Madison Ave., Cleveland 2, Ohio

N. Y. Rep.: Edwin J. Jud, 520 Fifth Ave., New York 36, N. Y., MUrray Hill 2-5844

Because only Jenkins
gives you this 18 Point Protection
against valve repairs

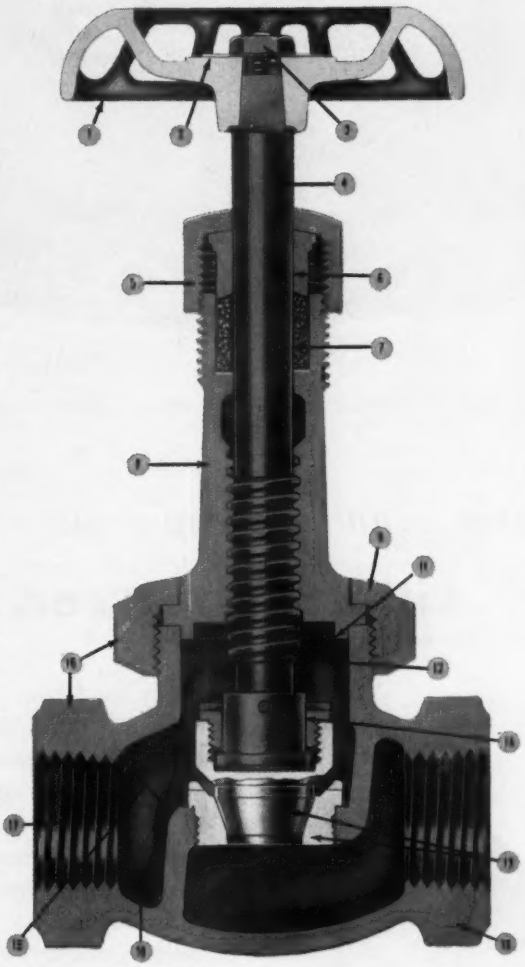
Specify JENKINS for PLUG TYPE Bronze Valves, too

THROTTLED STEAM with its destructive erosive effect on a valve seat . . . hard, seat-cutting substances like rust tubercles, boiler scale, pipe chips. Such valve destroyers have little or no effect on a Jenkins Bronze Plug Type Valve. Jenkins 500 Brinnell Armor Seat defeats them.

There's much more to the durability of these valves than the seat. Jenkins gives you 17 *other* superior features that contribute to long-life and completely satisfying service. All are important to any valve user who wants maximum economy, and only Jenkins gives you all of them. Send for literature which gives full details about them.

Still more protection against valve repairs comes from superiorities which cannot be seen in any picture of a valve: The quality in the castings . . . the precision machining . . . the rigid inspection and testing which every Jenkins Diamond-marked valve undergoes.

You have many sound reasons for specifying Jenkins when the service calls for PLUG TYPE Bronze Valves. And you pay no premium for them. Write us or ask your Jenkins distributor for information folder.



1. PERFECT GRIP HANDWHEEL
2. VALVE INDEX PLATE
3. SECURE WHEEL NUT
4. SPINDLE OF HIGH TENSILE BRONZE
5. LARGE PACKING NUT
6. SELF-ALIGNING PACKING GLAND
7. DEEP STUFFING BOX
8. HEAVY BONNET
9. HUSKY UNION BONNET RING
10. UNIQUE WRENCH LUGS
11. CORRECT ALIGNMENT OF PARTS
12. BACK SEATING PROTECTS THREADS
13. PLUG AND SEAT RING OF CHROMIUM STAINLESS STEEL
14. LOCKNUT
15. FULL DIAPHRAGM-SHELL CLEARANCE
16. LIBERAL DIAPHRAGM WALL CLEARANCE
17. FULL LENGTH PIPE THREADS
18. EXTRA HEAVY BRONZE BODY

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES

Sold Through Leading Distributors Everywhere

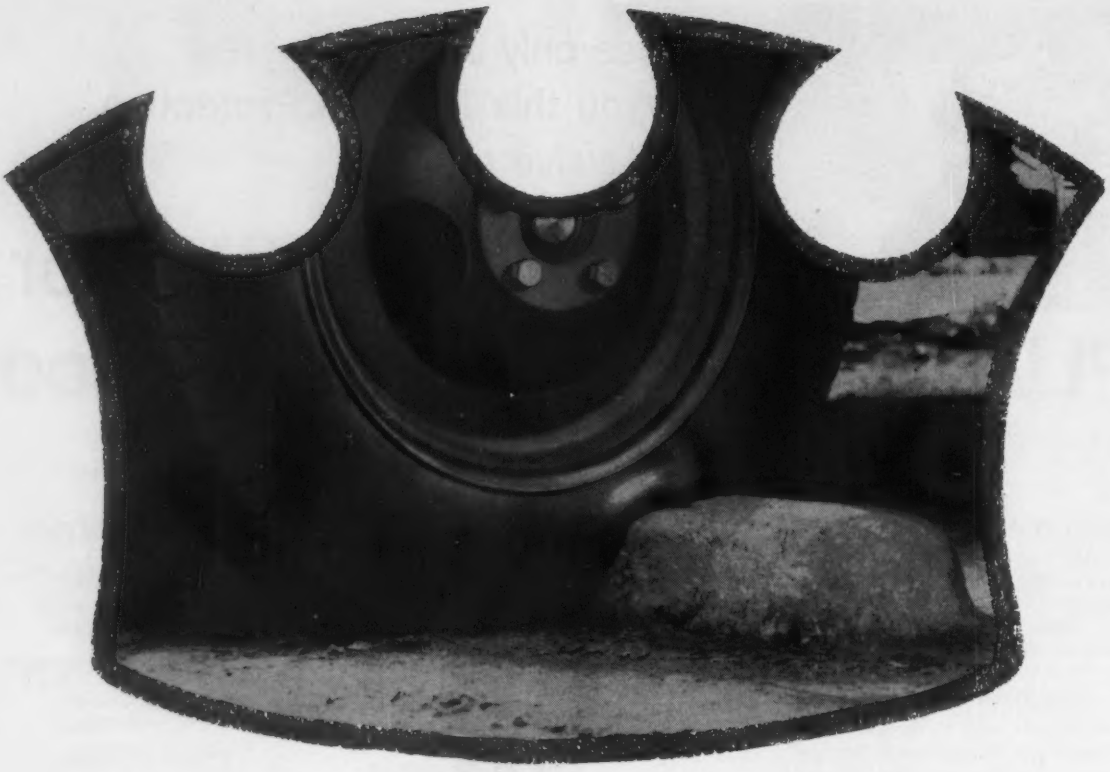
JENKINS BROS., 100 Park Avenue, New York 17

Send folder No. 202-A describing Plug Type Bronze Valves

Name & Title.....

Company.....

Address.....



In truck tires...and lug cap seals

Live rubber can take it

Top-quality truck tires are made with live rubber because its resilience is essential to safe, dependable performance. Resilience is equally essential in a lug cap sealing ring. But only Crown provides you with live rubber rings. For longer shelf life and positive seal despite minor glass flaws, your best choice is Crown lug caps. Your inquiries will be answered promptly.

CROWN

for cans · crowns · closures · machinery

CROWN CORK & SEAL COMPANY, INC., 9300 Ashton Road, Philadelphia 36, Pa.

FE SERVICE CENTER

Catalogs ..... p. 125
Books ..... p. 130
Patents ..... p. 133
Classified ..... p. 135
Advertisers' Index ..... p. 138
Reader Service ..... Back of Book

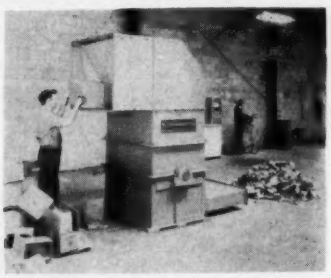
NEW EQUIPMENT & SUPPLIES

Widens GC Ion Detection

New ionization detector for gas chromatography provides unusually high sensitivity. This enables analysis of a wider range of compounds, with fast linear response achieved over a broad field of concentration.

Simple and compact, unit is offered for use with maker's Kromo-Tog equipment. In operation, electrons for ionization are supplied by emission, with detector responsive to sample rather than carrier. Ready control of the ionizing energy provides flexibility for special techniques. —*Burrell Corp., 2223 5th Ave., Pittsburgh 19.*

Circle 316 on Reader Service Card



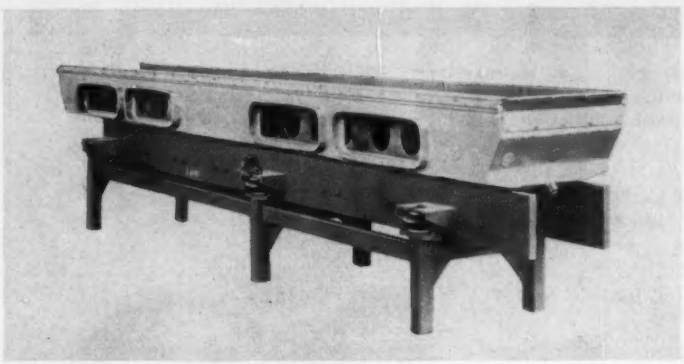
Shredder Pays 3 Benefits

New carton shredder (above) is convenient unit for speeding 'clean out' of old cartons and regaining box-storage space. And it saves high percentage of man-power formerly assigned to tedious hand bailing.

Produced are small bits of cardboard readily fed pneumatically to a bailing unit. Material is thus 'processed out in a form highly acceptable to paper mills.

Machine may be fed either manually (photo) or by conveyor.—*Mitts & Merrill, Saginaw, Mich.*

Circle 317 on Reader Service Card



New Fully-Automatic Dryers

Two special dryers—a direct type (photo) and an indirect type—are announced. Fully automatic, the units come in standard lengths of 10 and 20 ft.

Direct model carries granular materials in range of ¼ in. down to 60 mesh on a stainless steel conveying surface through which drying air or gas is passed. Indirect version handles very fine materials on solid-plate conveyor warmed from below by low-pressure steam or heated air.

Units have variable-amplitude drive, permitting ready adjustment of speed of travel and depth of material.—*The Jeffrey Mfg. Co., Columbus, Ohio.*

Circle 317 on Reader Service Card

Unit Curbs Bacteria, Molds

New handy plug-in unit, the Vita-Aire, is designed to abolish bacteria, molds, and odors in produce, dairy, and other food-storage areas.

Incorporated in cabinet of unit are generating plates that produce an ultra-violet field. Atmosphere in area constantly circulates through these plates to be ionized and thus purified.

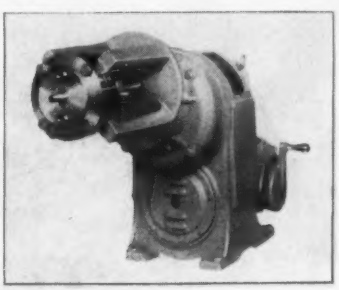
Ionizing system employs no electric spark, hence there's no creation of undesirable nitrous oxides.—*Federal Refrigerator Mfg. Co., Waukesha, Wis.*

Circle 318 on Reader Service Card

Continuous Mixer for Lab

New continuous automatic mixer, Model 4M, is specially designed for laboratory research work or small pilot operations. Machine may be ordered either as an integral unit with direct connected, vari-speed drive or as a separate unit for belt drive.—*E. T. Oakes Corp., Commack Rd., Islip, L. I., N. Y.*

Circle 319 on Reader Service Card

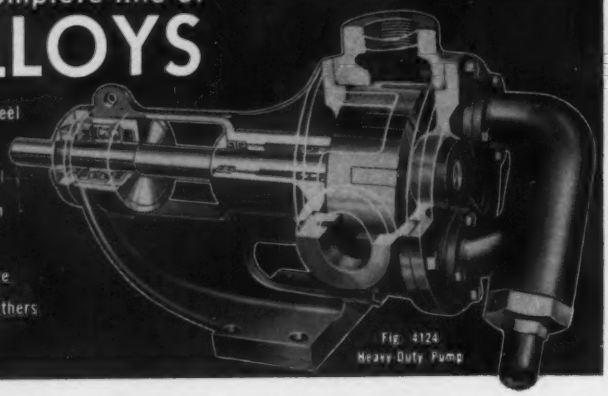


NOW! VIKING PUMPS

in a complete line of

ALLOYS

Stainless Steel
Monel
Steel Nickel
Nodular Iron
Ni-Resist
White Bronze
and many others



Have problems of handling liquids and semi-solids of a corrosive nature, or where contamination is not permitted? Viking Rotary Pumps made of alloys to fit the need, will answer those pumping problems.

Available in a capacity range from ¼ to 300 G.P.M. and larger. New induction melting foundry facilities mean rigid control and faster delivery of the complete line of Viking alloy pumps.

Send your pumping problem to Viking today and ask for Alloy Pump catalog ME.

VIKING — The Leader not a follower in Rotary Pumps

VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" pumps
See Our Catalog in Sweet's Plant Engineer's File

CIRCLE 230 ON READER SERVICE CARD

add sales punch to your foods with **PRO-80** *protein*

The sales punching-est words in food merchandising these days are "protein enriched." With General Mills Pro-80 Vital Gluten (80% wheat protein m.f.b.) you can raise the protein content of your foods to any level desired. Economically. Easily. Pro-80 provides these processing benefits:

★ *Hydration agent* ★ *Oil and fat absorber*
★ *Adhesive and cohesive agent*
★ *Dough former* ★ *Strengthening agent*

You should get all the facts about Pro-80 right now while interest in protein enrichment is still climbing. For more specific information covering your food product write:

SPECIAL COMMODITIES DIVISION
Minneapolis 26, Minn.
General Mills

Checklist of helpful McGRAW-HILL BOOKS

1. REFRIGERATION AND AIR CONDITIONING

Modern, unified discussion, synthesizing the fundamentals of thermodynamics, heat transfer, and fluid mechanics. Treats vapor-compression cycle, analyzes actual commercial equipment. **By W. F. Stoecker, Univ. of Ill., 397 pp., $8.00**

2. STERILIZATION IN FOOD TECHNOLOGY

Covers destruction of organic cells by lethal energy, mathematical methods of predicting success, and uses with canned goods, pharmaceuticals. **By C. O. Ball, Rutgers Univ., and F. C. W. Olson, Fla. State Univ., 654 pp., 160 illus., $20.00**

3. COMMERCIAL FRUIT AND VEGETABLE PRODUCTS

Comprehensive account of modern advances in the technology of canning, freezing, juice production, and the manufacture of citrus products and other fruit and vegetable products. **By W. V. Cruess, Univ. of Calif., 884 pp., 125 illus., $15.00**

4. INDUSTRIAL MICROBIOLOGY

Guide to the utilization of yeasts, bacteria, and molds. Discusses alcoholic beverages, pickles, dextrans, cheese. **By S. C. Prescott and C. G. Dunn., Mass. Inst. of Technology, 3d Ed., 945 pp., 245 tables, 155 illus., $17.50**

5. PROCESS INSTRUMENTS AND CONTROLS HANDBOOK

Thorough treatment of the operating and design fundamentals of measurement and automatic control systems used in the process fields. Formulas and other engineering data. **Ed. by D. M. Considine, P. R. Mallory & Co., 1286 pp., $19.50**

6. FOOD MICROBIOLOGY

Summarizes developments of last 13 years, emphasizing principles, giving illustrative examples. Discusses microorganisms, preservation, spoilage, enzymes, disease, sanitation, control, inspection. **By W. C. Frazier, Univ. of Wis., 472 pp., $9.00**

7. ENGINEERING MANUAL

Concise reference to fundamental data and methods in six engineering fields. Includes specialized tables of mathematical, physical, and chemical data. **Ed. by R. H. Perry. Formerly Scientific Design Co., 680 pp, 450 illus., $9.50**

8. SUCCESSFUL TECHNICAL WRITING

Step-by-step methods and practical pointers on how to write for today's major technical markets. Covers articles, reports, papers, news releases, manuals, ads, and books. **By T. G. Hicks, Cooper Union School of Engineering, 287 pp., 30 illus., $5.50**

50 YEARS OF PUBLISHING 1909-1959 McGRAW-HILL BOOK COMPANY

See for 10 days free

McGRAW-HILL ON-APPROVAL COUPON

McGraw-Hill Book Co., Dept. FE-9
327 W. 41st St., New York 36, N. Y.

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

1 2 3 4 5 6 7 8

(PRINT)
Name .....
Address .....
City ..... Zone.... State.....
Company .....
Position .....

For price and terms outside U.S. write McGraw-Hill Int'l., N.Y.C. FE-9

Heavy-Duty Truck Reefer

Offered for extra duty refrigeration in long-haul truck-trailer transport is new specially designed diesel-powered unit.

Tradenamed the TropicAire Coldmobile, models are available in 5 to 8-ton refrigeration capacities for maintaining constant temperatures in the broad −20 to 70F. range, according to requirements of products carried.

For versatility in trailer installations, units are built with evaporator-blower sections separated from the engine-compresor-condenser sections. —*McGraw-Edison Co., 5201 W, 65th St., Chicago 38.*

Circle 320 on Reader Service Card

Makes Copies in 19 Sec.

Documents are copied in a mere 19 sec. using new "speed feed" Dial-A-Matic Auto-Stat photocopier.

Designed for desk-top use, unit will take originals up to 15-in. widths.

New fast action is credited to special rollers that clamp documents, guide them automatically.—*American Photocopy Equip Co., Evanston, Ill.*

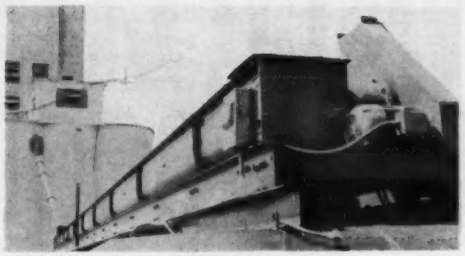
Circle 321 on Reader Service Card

Vibra-Table Aids Packaging

Settling action required in packaging various foodstuffs is sped by this pneumatic vibrator table. Operator controls vibration frequency merely by changing air pressure.

Model RV2 (shown) has 25x28-in. table. Included are automatic lubricator, pressure regulator with gage, and knee, foot, or hand lever valve.—*National Air Vibrator Co., 435 Literary Rd., Cleveland 13.*

Circle 322 on Reader Service Card



Whisks Bulk Granulars

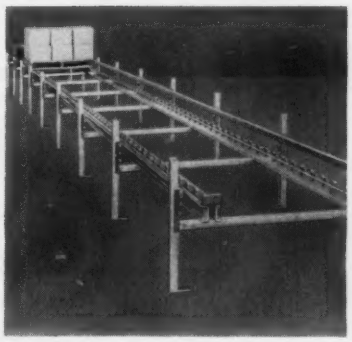
New fully enclosed, self-cleaning Flite-Flo conveyor is termed ideal for moving bulk granulars. A grain-company installation is shown.

Within unit's U-trough runs a single-strand chain that carries spaced flights (revealed in photo of trough with cover removed).

Flights are of flexible non-metallic material stiffened by steel plates. They match trough contour to insure effective cleaning action. Troughs are available in standard heavy steel, stainless steel, or special metal construction.

There is a choice of drive arrangements, including vari-speed. Also, various types of discharge spouts and gates can be supplied.—*Link-Belt Co., Prudential Plaza, Chicago 1.*

Circle 323 on Reader Service Card



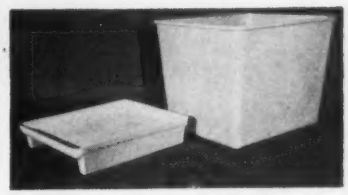
Versatile Pallet Conveyor

New Pelletflo conveyor is gravity unit that transfers up to 3,000-lb. pallet loads at slopes as low as $\frac{1}{8}$ in./ft. Rails are adjustable in both width and elevation.

Conveyor reportedly will carry even warped, broken-board pallets at controlled roll. Models are available for wide variety of pallet sizes, with arrangement for either side or end loading.

Rails (10-ft. long) are also available separately for processor's own special installations, as on floor, on beds of trailers, etc. With use of units, says maker, pallets become "mobile," and thus new handling efficiency is won.—*M-H Standard Corp., 517 Communipaw Ave., Jersey City 4, N. J.*

Circle 324 on Reader Service Card



Handy Transport Bin

Up to 3,000 lb. of materials can be handled or transported with this convenient new bin unit. It's made of glass fiber-reinforced plastic.

Seen alongside bin is its separate base unit. Maker bonds this on, then adds four neoprene rubber foot pads (5, 7½, or 9½-in. size, as specified). Finished bins are readily handled by fork-trucks or hoist lift-bars.

Bin dimensions: Length 4 ft., width 41.5 in., depth 36 in. Holding volume: 33.5 cu. ft., or 260 gal. Weight empty: 130 lb.

Initially developed for meat packers (USDA and AMI-approved), bins are smoothly lined inside with fine-texture matting and are stated to be completely water resistant. Drain hole and plug are incorporated.—*Goodyear Aircraft Corp., Akron 15, Ohio.*

Circle 325 on Reader Service Card

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail.

HOW AVISCO® CELLOPHANE SEALS IN GOODNESS

Cellophane is much more than a sparkling, transparent wrap that adds sales appeal. The film itself and the consistent, secure sealing it provides make it unmatched for *locking in* aroma and flavor—and keeping foods *fresher longer*. There are types of Avisco cellophane to give the exact moisture control different foods need. These films are also gasproof and impermeable to grease. What's more, cellophane is basically the most *versatile* of all films. It can be tailored to meet almost any requirement. Chances are there's a special coating or lamination that's just right for *your* product. What about cost? The initial cost of Avisco cellophane is *low*.

But even more important, its performance is *trouble-free* on high-speed packaging machines. Cellophane feeds and forms perfectly because it's rigid and static-free. And it heat-seals quickly and securely over a wide temperature range. Just as important is its *consistency* of quality. We offer a complete packaging service to assist you and demonstrate how Avisco cellophane, plain or printed, will answer your requirements *better* and *more economically* than any other packaging material. Contact us for an appointment with our representative in your area or a selected cellophane converter specializing in your field.

AVISCO

AMERICAN VISCOSE CORPORATION, FILM DIVISION

1617 PENNSYLVANIA BOULEVARD, PHILADELPHIA 3, PA.

Robot for Formula Batching

Automatic Remocon installation (above) achieves advanced batching control, eliminating need for manual adjustments. Operator is seen inserting "Batchboard" that can "key in" as many as 20 ingredients according to preset formula.

Each Batchboard (7x10x2 in.) contains contact holes representing weight values. Plug wires are inserted in appropriate holes to set up desired batch weight of each ingredient for single or multiple scales.

An individual, numbered Batchboard is used for each formula, and once unit is wired, it can be used indefinitely.

Among features is partial batch control, whereby operator may put through a chosen percentage of any pre-set formula merely by setting a selector switch and without changing master formula.—*Toledo Scale Corp., Toledo 12, Ohio.*

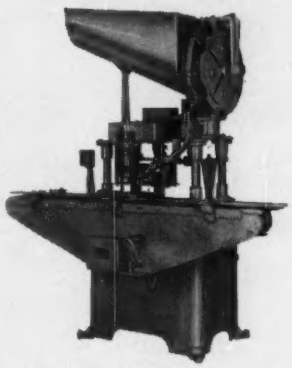
Circle 326 on Reader Service Card

Pressure-Thrifty Dispenser

New 'foamy-type' dispensing valve —result of extensive experimentation —retains gas pressure in container until all product inside has been de-

RESINA

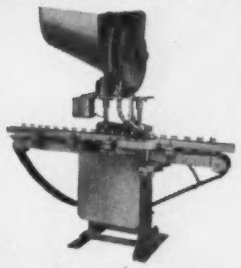
fully automatic
SCREW CAPPER



The RESINA line of CAPPERS include models for sorting, feeding and applying a great variety of caps to bottles, jars or cans from ½ ounce to gallons. Speeds available up to 120 per minute.

TOPS THEM ALL

fully automatic
FITMENT APPLICATOR



Automatically selects plastic fitments (solid or perforated) with or without lift tabs and orients them into a chute. Passing container picks up fitment which is then snapped on the container. Speeds available up to 120 per minute or higher.

Descriptive literature and specifications on request.

RESINA AUTOMATIC MACHINERY COMPANY, INC.
572 SMITH STREET • BROOKLYN 31, NEW YORK

CIRCLE 231 ON READER SERVICE CARD

CY BELT says

"I can eliminate 'time lag' and speed production!"

Too often material in process can go only so far, and then must wait until somebody carries or pushes it to the next stage in the production line. The delay caused by the need for manual handling can frequently be eliminated by a *complete* conveyor system that reduces manual handling to the absolute minimum. Time is saved, unit costs are reduced, and the profit margin is widened. A trained Cyclone salesman can analyze your present materials-handling system to uncover time-wasting procedures, and suggest improvements. His analysis costs nothing, and his recommendation will be tailored to *your* plant and *your* needs. Just fill in the coupon.

USS and Cyclone are registered trademarks

USS **Cyclone Metal Conveyor Belts**
Spiral Woven • Flat Wire • Flex-Grid

Prompt service to belt users is assured by two factories, one in the Middle West and one on the Pacific Coast.

Cyclone Fence Dept.
American Steel & Wire
Division of
United States Steel

USS

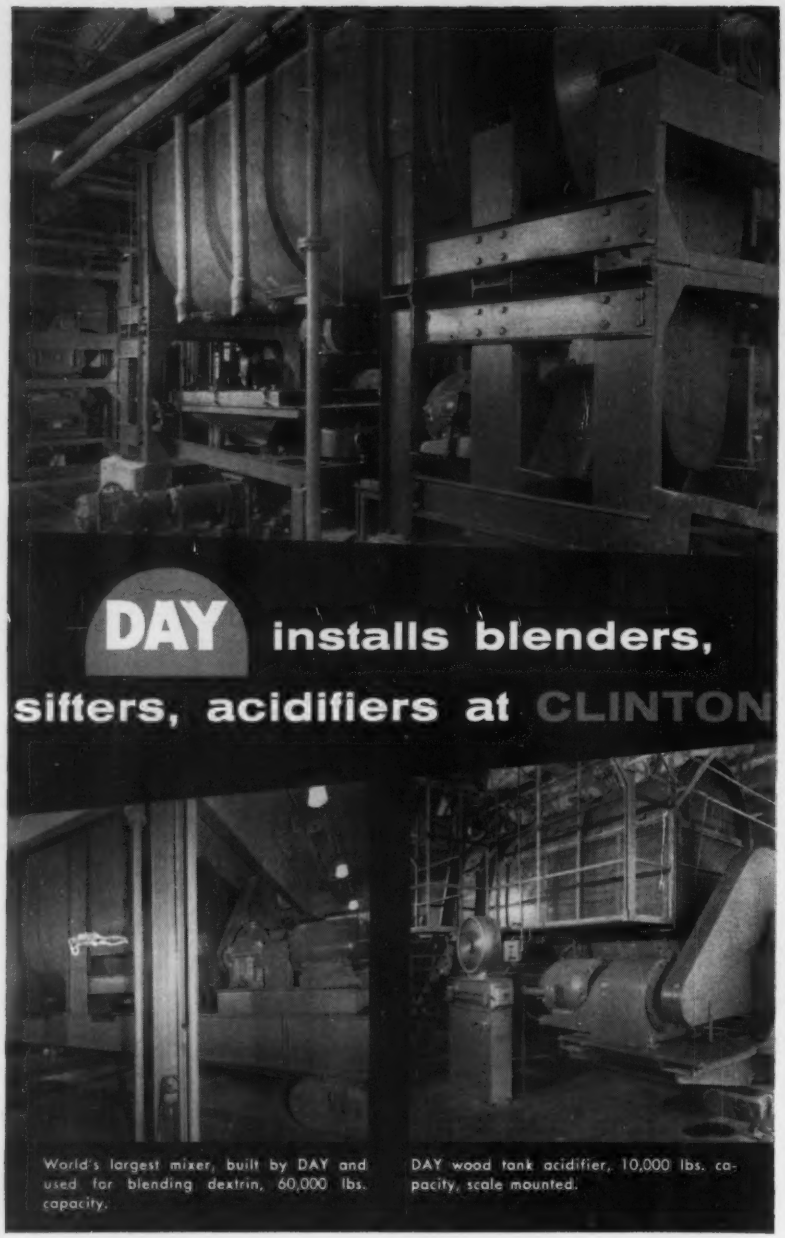
Manufactured at Waukegan, Ill. and Oakland, Calif.
Sales Offices, Coast to Coast

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. H99, 614 Superior Avenue, N.W.
Cleveland 13, Ohio

Please send me, without obligation, your catalog No. 5 on Cyclone Processing Belts.

Name.....
Company.....
Address.....
City..... State.....



World's largest mixer, built by DAY and used for blending dextrin, 60,000 lbs. capacity.

DAY wood tank acidifier, 10,000 lbs. capacity, scale mounted.

Clinton Corn Processing Company, a division of Standard Brands, Inc., Clinton, Iowa, has used DAY process equipment for years and has found it to be dependable and economical. Therefore, when equipping its new, modern plant, DAY blenders, sifters, coolers and acidifiers were again specified and installed.

If you make DAY process equipment your *first choice*, you, too, will produce a better product at real savings. Remember:—"Every day is a great day when you use DAY equipment". Why not write for a catalog now?

The J. H. DAY Co.
Division of The Cleveland Automatic Machine Co.

SERVING THE PROCESS INDUSTRY SINCE 1887
4924 BEECH STREET
CINCINNATI 12, OHIO

Equipment & Supplies

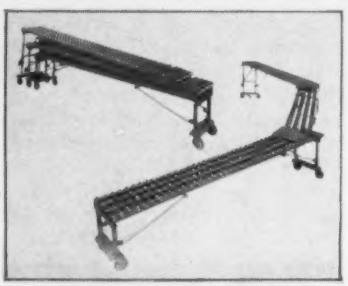
livered. Unit's high performance is credited to close-tolerance manufacture.—*Clinton Valves, Inc., 35135 Groesbeck H'wy., Mt. Clemens, Mich.* **Circle 327 on Reader Service Card**

'Drive-In' Storage Racks

Fully-adjustable pre-fab storage racks allow lift-truck (arrow) to drive in from either end, thus saving aisle space.

Called Drive-In Speedracks, efficient units store stackable or non-stackable commodities right to roof and are so rigid no anchoring is required. Stock-picking is sped, since selected pallets are readily removed at any level.

Through feature of interchangeable trusses and beams, sections can at any time be added or taken out to provide racking of any desired height, width, and depth. Structuring fosters free air circulation in cooler installations.—*Storage Products Corp., 4418 Oakton St., Skokie, Ill.* **Circle 328 on Reader Service Card**



All-Around 'Scope Conveyor

Top versatility is found in this telescoping conveyor.

Its three sections may be extended, as needed, from 11 ft. 10 in. up to 29 ft. 6 in. Further, it may be pivoted inside truck or RR car, or around pillars or stacks of cases.

At discharge end, it will service any point from straight to approximately 90 deg., to either left or right.

Each section (18-in. wide) consists of four paired "Live Rails", with

Enlargements of this illustration, suitable for framing, are available upon request.

Cutting the cost...of a "mountain" of steel desks!

Two attachments were recommended by the Clark Engineers consulting with this company: 1) A Slndr-Arm Clamp to eliminate the need for pallets, 2) A Triple Stage Upright for extra high stacking without sacrificing the lift truck's ability to work in low-overhead rail cars.

The end result was a big boost in storage capacity, *one-truck* handling from warehouse storage to loading-out . . . a need for fewer trucks.

Your nearby Clark dealer, a materials handling specialist in his own right, has access to the same team of factory specialists that developed a "first" in this Company's industry. You'll find him anxious to offer you similar assistance. Call him direct, or write: Materials Handling Specialists, Clark Equipment Co., Battle Creek, Michigan.

CLARK® EQUIPMENT

U. S. A.

The warehouse of the Coca-Cola Bottling Company, Las Cruces, New Mexico was photographed in natural light.

With the lights turned out does your warehouse look like this?

Isn't daylight the sensible, economical lighting for a warehouse? Of course—and a Butler warehouse with Lite*Panls in the roof offers excellent daylighting without costly skylights. But this is only one advantage of Butler construction.

Look again! There isn't a column or truss anywhere. Every cubic foot from wall to wall and floor to roof peak is pay space.

On top of this, Butler construction is the lowest-cost way to build well. Assembly and erection are fast. You save weeks and months of costly construction time—are in business and earning profits much sooner. Your completed warehouse is weathertight, fire-safe and requires only a minimum of maintenance. It can be expanded quickly and economically by adding extra bays.

For full details on why Butler warehouses can be your best investment, contact your local Butler Builder. He's listed in the Yellow Pages of your phone book under "Buildings" or "Steel Buildings." Or write directly to us.

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7504 East 13th Street, Kansas City 26, Missouri

Manufacturers of Metal Buildings • Equipment for Farming, Oil Transportation, Outdoor Advertising • Contract Manufacturing

Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich. • Cleveland, Ohio Pittsburgh, Pa. • New York City and Syracuse, N.Y. • Boston, Mass. • Washington, D.C. • Burlington, Ontario, Canada

a pattern of 32 wheels per foot of length and handles up to 60 lb./ft.

Pipe-stand supports are readily adjustable in 21-to-60-in. height range. They're shod with rubber-tired ball-bearing casters.—*The Alvey-Ferguson Co., 128 Disney St., Cincinnati 9.* Circle 329 on Reader Service Card

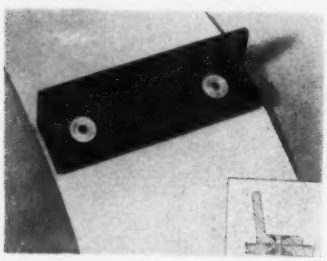
For In-Plant Remote Viewing

Here are basic camera (top) and monitor (above) in new line of high-performance closed-circuit industrial TV products to be put on market next month.

Camera will be offered in four versions, providing: (1) Either locked, or, random interlace, and (2) either automatic, or, manual light compensation. Rugged 14-in. monitor gives virtually perfect interlace of fields when used with interlace cameras.

Remote control functions can be incorporated in camera—as pan and tilt, iris adjustment, focus, and zoom lens.—*Motorola Inc., 4501 W. Augusta Blvd., Chicago 51.*

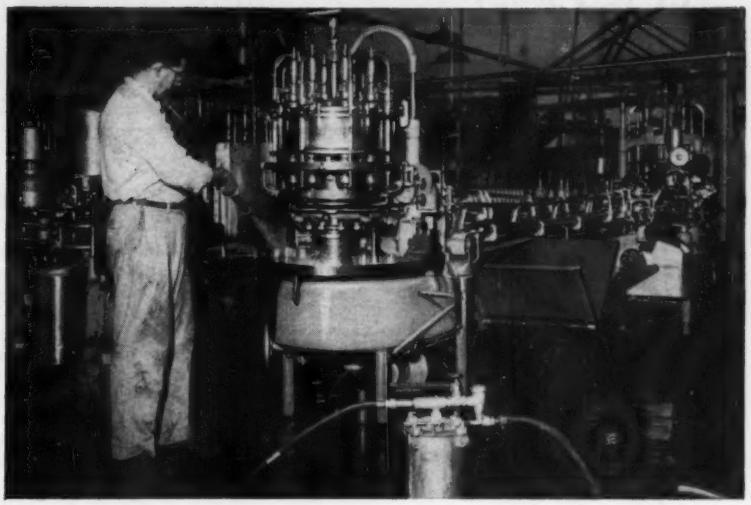
Circle 330 on Reader Service Card



'Easy Fit' Conveyor Cleats

Only belt punch and screwdriver are needed to install new low-cost conveyor cleats. Named Bolta-Flite,

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite



New General Cleaner!
Oakite LIQUI-DET® No. 2
banishes toughest food soils

Cooked on or dried on chocolate, egg, milk, syrups . . . try it on the toughest food soil you can, and see how new Oakite Liqui-Det No. 2 wets through it with ease. What's more, Liqui-Det No. 2 produces good suds for vigorous cleaning action . . . rinses thoroughly with no trace of film or water spotting . . . contains no odor-producing solvents . . . is safe for any food-contact surface.

Just mix an economical ½ to 2 ozs. in a gallon of water; wipe, mop or spray it on; mop, wipe or hose it off. Surfaces sparkle. Stainless steel, especially, looks *newer* after each washing.

Liqui-Det No. 2 is the latest general cleaner for food preparation areas. And it's the best yet. Try it!

THE BIG PLUS IN OAKITE

Ask the Oakite man to demonstrate Liqui-Det No. 2 in your plant. Working with him is like adding a consulting sanitation engineer to your staff. It gives you the latest research results in cleaning. It means an end to costly waste of time and materials. It brings mechanization to tedious chores. It *guarantees* materials that do the job. Send for Bulletin B-8165, which tells more. Oakite Products, Inc., 26G Rector Street, New York 6, N.Y.

OAKITE
50 1909-1959 SCIENCE
years' leadership in industrial cleaning

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. H-99, 614 Superior Avenue, N.W.
Cleveland 13, Ohio

Please have your trained representative call on us to discuss our production problems.

Name_____

Company_____

Address_____

City_____ State_____

To Whom money May Concern:

If your production costs are higher than they ought to be, you very likely can do something about it. Often one change in a method or process can make the difference between loss and profit. We'd like a chance to consult with you and see if such a change in method won't improve *your* profit picture. (It certainly has paid off for many other firms). The best part is, that it won't cost you one cent to find out. Just clip the attached coupon and mail it. When you do, one of our trained conveyor belt representatives will visit you to discuss and examine your particular problem and offer suggestions that will show you how Cyclone Metal Processing Belts may cut your production costs below the ulcer level. These suggestions will be tailored to YOUR problem . . . and no obligation. How can you lose? Do it. today.

USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of

USS

United States Steel

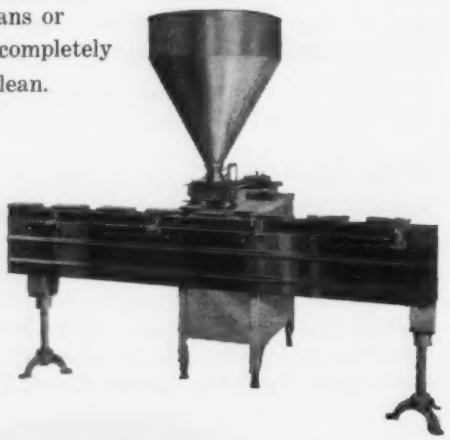
Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

CIRCLE 232 ON READER SERVICE CARD

For inexpensive filling . . .

the SIMPLEX TWIN

Top efficiency with this fully automatic Simplex Model T. A universal machine to handle cartons, cans or jars. No can no fill, completely adjustable, easy to clean.



Fills 25 to 80 containers per minute! Range from 2 oz to a gallon! Handles liquids and semi-solids!

Write for circular on this 2-piston model and other Simplex fillers. Dept. FE.

F. L. BURT COMPANY

571 7TH ST.—SAN FRANCISCO 3, CALIF. PHONE KLONDIKE 2-2020

Name .....

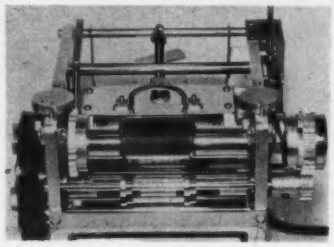
Address .....

City .....State .....

Equipment & Supplies

the 4-in.-high units are offered in black or white rubber or neoprene. Their resiliency safeguards "soft" products and fosters long belt life. For heavy-duty service, special metal stiffeners are available.—*Holz Rubber Co., Inc., Lodi, Calif.*

Circle 331 on Reader Service Card



Portable Label Maker

This portable flexographic unit prints and die-cuts on pressure-sensitive label paper, or score-cuts on gum, heat seal, or plain paper.

Machine is very compact—measuring but 9x9x9-in. without guard case—yet affords top performance: 6,000 labels per hour.

Maker emphasizes that use of unit "on the job" eliminates need of large label inventories. Printing plates and colors are quickly changed as required.—*Sohn Mfg., Inc., P.O. Box 87, Plymouth, Wis.*

Circle 332 on Reader Service Card

Handy Drying Unit

This "warming box" is convenient unit for lab or production drying of food materials to 400F. range.

Measuring 18 in. wide and deep by 24½ in. high, box incorporates both master heating element (1,500w.) and strip heaters (800w.), along with 1-in. insulation and thermostat control.—*Trent, Inc., 201 Leverington Ave., Phila. 27.*

Circle 333 on Reader Service Card

CIRCLE 116 ON READER SERVICE CARD

CIRCLE 117 ON READER SERVICE CARD→

from OLIN MATHIESON

a whole family of kraft packages for shipping, selling!

Now Olin Mathieson offers complete kraft packaging service —Cartons, Containers, Bags and Sacks—all the way from your door to the consumer's. Contact the Olin Mathieson kraft packaging team today: let them show you how superior raw materials, better package design, and new Olin Mathieson packaging developments can help you save more, sell more! Packaging Division, W. Monroe, Louisiana.

OLIN MATHIESON • PACKAGING DIVISION

Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Unloading and Storing Bulk Salt in One Operation...by Hydraulic Handling

Many companies faced with the need to unload and store large shipments of bulk salt have installed Hydraulic Handling systems. In these systems, salt delivered by car, truck or barge is dumped into a pit and mixed with saturated brine. The slurry is then pumped into a wet salt-storage tank. Overflow carrier brine returns to the pit to carry more salt into storage. The operation, besides being continuous, also offers these important benefits:

Hydraulic Handling can move salt any distance. Because the necessary piping is flexible and can be installed anywhere, there's no need to move existing equipment or disrupt important operations. Hydraulic Handling is dustless, safe, and more economical than many mechanical handling systems. One man can operate it. Maintenance is negligible. And, to handle larger salt shipments as production increases, the system can be expanded at nominal expense.

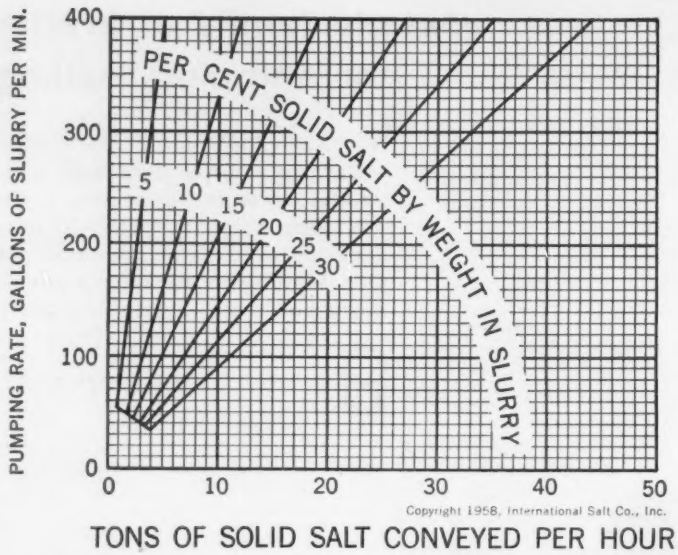
While any Hydraulic Handling installation provides these benefits in some degree, only sound engineering can assure 100% efficiency and economy. Here are a few of the factors that are important to the proper function of every Hydraulic Handling system . . .

Pit design. This differs according to whether salt is delivered by hopper car, boxcar, truck or barge. Where excavation is difficult, special designs are available from International Salt Company for building shallow pits that will operate effectively.

Pump types and capacities. To move salt into storage, a special "solids-handling" pump is needed. This pump, often the only moving part in the entire system, must be able to speed salt slurry through pipes at a rate high enough to assure that salt particles will not settle and eventually clog the piping.

Some plants also use a high-pressure brine pump to bring circulating brine back to the slurrying pit. Both pump types are available in a choice of materials (white or gray iron, manganese steel, etc.).

Pipelines, valves. Pipelines should have long, straight runs, with as few elbows or other fittings as possible. Valves must offer minimum resistance to the flow of slurry.



For expert advice on the most practical Hydraulic Handling system for your plant, contact International Salt Company. One of International's experienced sales engineers will gladly furnish information on minimum clogging and settling velocities . . . liquid-level controls for slurrying pits . . . dilution valves for proper slurry make-up . . . and other factors that go to make an efficient, trouble-free Hydraulic Handling system.

50 YEARS OF SALT EXPERIENCE CAN BENEFIT YOUR COMPANY

From 50 years' field experience and a continuing research and development program (the first ever established in the salt industry), International has accumulated an unequaled amount of technical data on salt—its production properties and uses. Our engineers will be glad to make this information available to you without charge. They can also help you select the right salt for your needs —from the complete line of high-quality Sterling Rock and Evaporated Salt. Contact your nearest International Salt Company sales office, or write to us direct.

International Salt Company, Inc., Scranton 2, Pennsylvania • Sales Offices:

Atlanta, Ga.	Chicago, Ill.	Memphis, Tenn.	Philadelphia, Pa.
Baltimore, Md.	Cincinnati, O.	Newark, N. J.	Pittsburgh, Pa.
Boston, Mass.	Cleveland, O.	New Orleans, La.	Richmond, Va.
Buffalo, N. Y.	Detroit, Mich.	New York, N. Y.	St. Louis, Mo.

Service and research are the extras in

STERLING SALT

INTERNATIONAL SALT COMPANY, INC.

INGREDIENTS

Natural Butterscotch Powder is new convenient concentrate. Using this product, processors readily and economically prepare their own scotches for variegating and topping purposes. —*American Food Laboratories, 1000 Stanley Ave, B'klyn 8, N. Y.* (334)

Hickory Smoked Torula Yeast is now offered food processors by—*American Bio-Synthetics Corp., 710 W. National Ave., Milwaukee 4.* (335)

NEW SUPPLIES

Epoxy Floor Coater & Sealer, called PG-1013, is stated by maker to "literally weld itself" to concrete surfaces. Mineral aggregate in mix provides toughness and skid-proofing. Available in gray, red, and green, product covers up to 75 sq. ft. per gal.—*Permagile Corp. of America, 34-43 56 St., Woodside 77, N. Y. C.* (336)

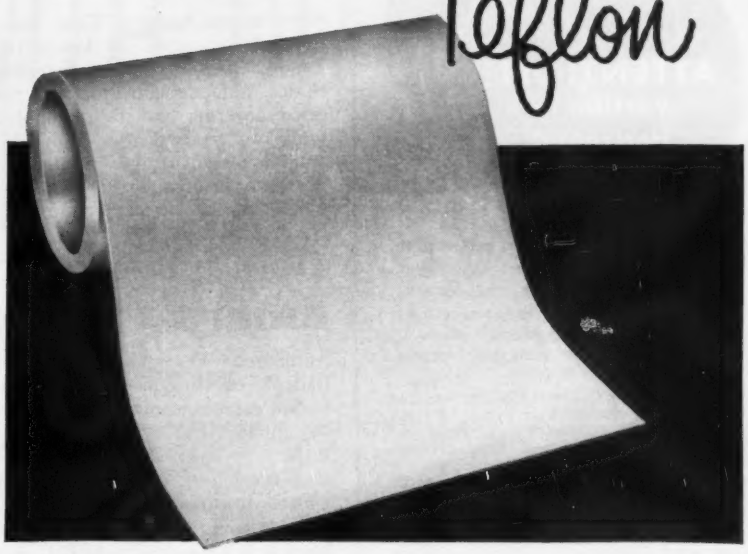
Disinfectant & Deodorizer, tradenamed Fyte, is new residual-action germicide. Conveniently 'misted' by aerosol, it's cited as quick purger of bacteria, fungus, and common germs. —*Hysan Products Co., 932 W. 38th Pl., Chicago 9* (337)

Vari-Colored Polyethylene Coatings are given metals or glass by spraying on product known as Super Dylan. Units are then heated to 400F to bond coating to surface. Protective film-lining of food and beverage cans is one of many applications.—*Plastics Div., Koppers Co., Inc., Pittsburgh 19,* (338)

Plastic Metallic Packing called Lonsor is readily-conforming material for high-performance applications in valves, stuffing boxes, shafts, turbines, and press units. Self-lubricating non-hardening product comes in handy 1-lb. cakes.—*Newage Industries, Inc., 222 York Rd., Jenkintown, Pa.* (339)

Metal-Cleaning Agent named Dual Bright 35 is recommended by maker for cleansing aluminum or stainless steel surfaces. Particularly suitable for use on vans and trailers, it also may be employed for reconditioning plant equipment and parts. Chemical action removes oxidation and corro-

NOTHING STICKS TO Teflon*



FOR FOOD PROCESSING . . . AN ECONOMICAL *time saver*

Prevents delays. As a lining for hoppers, mixers, chutes, Cementable Teflon, with its low coefficient of friction, moves dry powders and sticky batches swiftly, freely. Eliminates material build-up and the need for vibrators.

Eliminates conveyor jamming. Teflon's slippery surface on conveyor guide rails slides packages on their way without jam-up. Preserves shelf appeal of boxes, labels, bags.

Reduces clean-up time. Just wipe off Teflon work surfaces and they are ready for re-use. No lost time in soaking or scraping hardened, gummy food particles.

Cementable Teflon, as made by Garlock's Plastics Division, the United States Gasket Co., is non-contaminating, odorless, colorless, tasteless, non-absorbent. It can be bonded to metal, wood, glass, concrete, other surfaces. Available in continuous tapes .005″ through .096″, through 24″ wide, and in sheet through 48″ x 48″.

See how you can put this time-saver to work. Contact one of the Garlock Packing Company's 26 sales offices and warehouses in the U. S. and Canada, or write for Catalog AD158.

United States Gasket

THE GARLOCK PACKING COMPANY, Palmyra, N. Y.

*DuPont Trademark for T.F.E.-fluorocarbon resin

Plastics Division of GARLOCK

Cook-Chex takes the last trace of guesswork out of production control.

1. Eliminate wrong cook schedules.
2. Keep retort baskets in sequence.
3. Guard against "by-passing" retorts.
4. Provide low-cost permanent records for your cooking-plant.

Cook-Chex is the chemically impregnated retort tag that changes from purple to green *only* after your run has been properly and completely retort processed. Hang a Cook-Chex on each basket before retorting—inspect it after withdrawing. You have the full "protection" record at a glance. It's that easy—that sure.

Used by *all* major packers. Approved and recommended by cannery inspectors. Ask *them!*

Send for Free samples.

ASEPTIC-THERMO INDICATOR CO.
DEPT. FE-6
11471 Vanowen Street, North Hollywood, Calif.

CIRCLE 233 ON READER SERVICE CARD

sion and dispels dirt, grease, and oil. —*Ross & White Co., Chicago Daily News Bldg., Chicago 6.* (340)

New Pressure-Sensitive Tape, Dilectrix LT, is made of low-friction Teflon. Thus, it's suitable for lining chutes, surfacing conveyor-belts, and other covering and facing applications in food plants. Splice-free lengths of 50 ft. are supplied in widths from ¼ in. to 12 in.—*Dilectrix Corp., Allen Blvd., Farmingdale, N. Y.* (341)

BRIEFS

Automatic Detergent Applicator, tradenamed Du-Zolver, dispenses up to 500 gal. of cleaning solution with one filling. High control for greater surface coverage is cited.—*DuBois Co., Inc., 120 W. Front St., Cincinnati 3, Ohio.* (342)

Motion Is Converted Into D.C. Signals using new fully-transistorized Compatible Electronic Transmitter. Unit is designed to work in three output-load ranges. — *Fischer & Porter Co., 142 Jacksonville Rd., Hatboro, Pa.* (343)

Portable Bucket Elevator affords top performance for handling granular materials from 6 to 12-ft. heights. Electric motor drives belt carrying steel buckets. Delivery chute, hopper, and casters may be specified to suit each application.—*New London Eng. Co., New London, Wis.* (344)

Handy V-Belt Kit permits on-job makeup of your own belting to length as needed, without lost time in locating proper-size endless belt. Once measured-and-cut, belting is simply threaded around pulleys, and ends are connected with fastener.—*Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44.* (345)

Indicating Relief Valve, tradenamed Demi Tattle-Tale, has red pin that pops out, readily visible, the instant valve is opened by excessive pressure. Unit can be 'keyed' to limit switches for additional signalling actions.—*George W. Dahl Co., Inc., Bristol, R. I.* (346)

Circle key numbers on Reader Service Card

New midget imprinter for wrapping machines*

- **Fully automatic**
- **Occupies less than 1 cu. ft.**
- **Instant drying action prevents smudging**

PHOTOGRAPHED AT CHIMES CAKE CO., CORONA, L. I., N. Y.

Gottscho **"Series 700" ROLAPRINTER®** Patented **attachment**

Compact, lightweight, and easy to install yourself, this precision-made unit imprints codes, prices, contents descriptions, block-outs, promotion specials, etc. on cellophane, polyethylene, glassine, foil, paper, waxed paper, etc. Makes accurately registered, consistently uniform impressions up to 4"x6". Foolproof—requires no adjusting or skill to operate. No change parts needed for different cut-offs. Hundreds already in successful use.

**Battle Creek, Campbell, Hayssen, Lynch, Oliver, Package Machinery, Pak-Rapid, Roto-Wrap, Simplex, Wrap-Ade, Wrap-King and others. For Stokeswrap, Mercury Vertipak, Trans-Wrap, AMF and National wrappers ask about our "WRAP-A-PRINTA" attachment.*

Write today for Bulletin "RIN-7"

First and foremost in automatic production-line CODING, MARKING and IMPRINTING machines — *Gottscho*®

GOTTSCHO Dept. G
HILLSIDE 5, N.J.

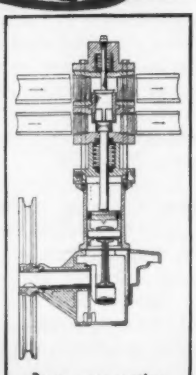
In Canada: Richardson Agencies, Ltd. · Toronto & Montreal

120 **CIRCLE 120 ON READER SERVICE CARD**

New pipe line metering feed pump is the ideal answer to metering, feeding, injection and other processes requiring positive displacement pumping . . . at a low cost. It is well-suited to pumping slurries and viscous materials.

Multiple inlet and discharge ports are particularly well-adapted to pumping from one circulating stream to another. The packing gland is on the low pressure side; high pressure packing is eliminated. It is well-suited to continuous processes requiring incremental slug feeding. It is available in capacities to 1 GPM and in a variety of construction materials.

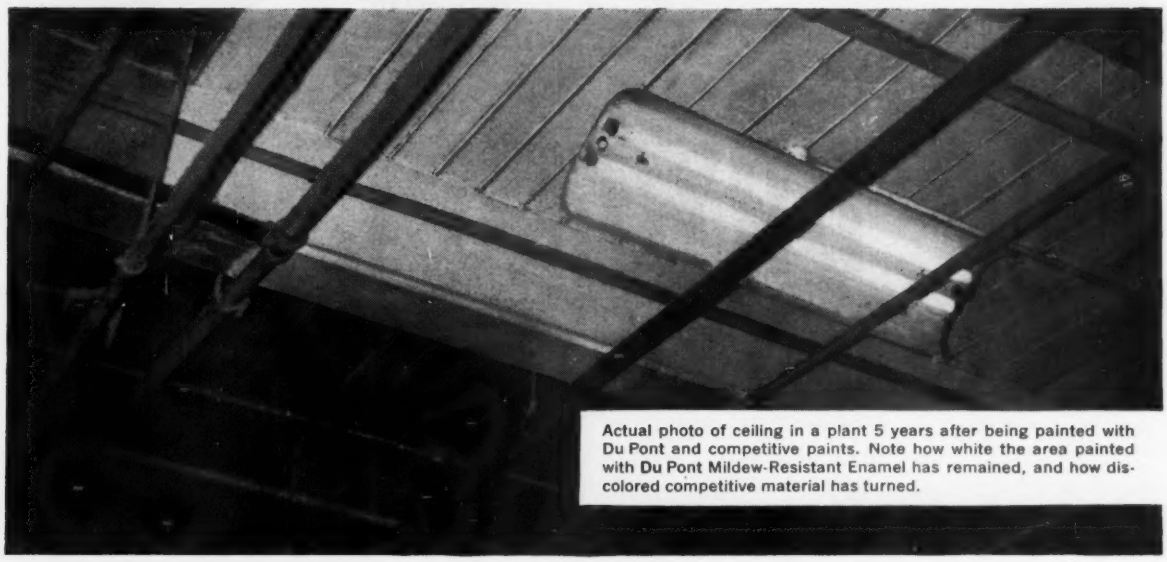
Write today for complete information.


Pump cross-section

SIGMAMOTOR Inc.
22 NORTH MAIN STREET, MIDDLEPORT, N. Y.

CIRCLE 234 ON READER SERVICE CARD

THE PROTECTION LASTS WITH DU PONT MILDEW-RESISTANT ENAMEL



Actual photo of ceiling in a plant 5 years after being painted with Du Pont and competitive paints. Note how white the area painted with Du Pont Mildew-Resistant Enamel has remained, and how discolored competitive material has turned.

It's odorless! Cuts maintenance costs!

Solves mildew and maintenance problems in hundreds of food plants

Tests prove that in most types of food processing plants, Du Pont 881 Mildew-Resistant Enamel Oyster White effectively retards mildew formations for months . . . eliminates the need for constant cleaning and scrubbing. It also resists chipping and cracking . . . stays bright looking. Like all Du Pont Maintenance Paints, it's pre-tested until perfect for your job. For complete information, mail the coupon . . . now!

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

E. I. du Pont de Nemours & Co. (Inc.)
Finishes Division, Dept. FE-99
Wilmington 98, Delaware

Gentlemen: Please send me, without obligation, free literature on how to combat mildew.

Name_____ Title_____

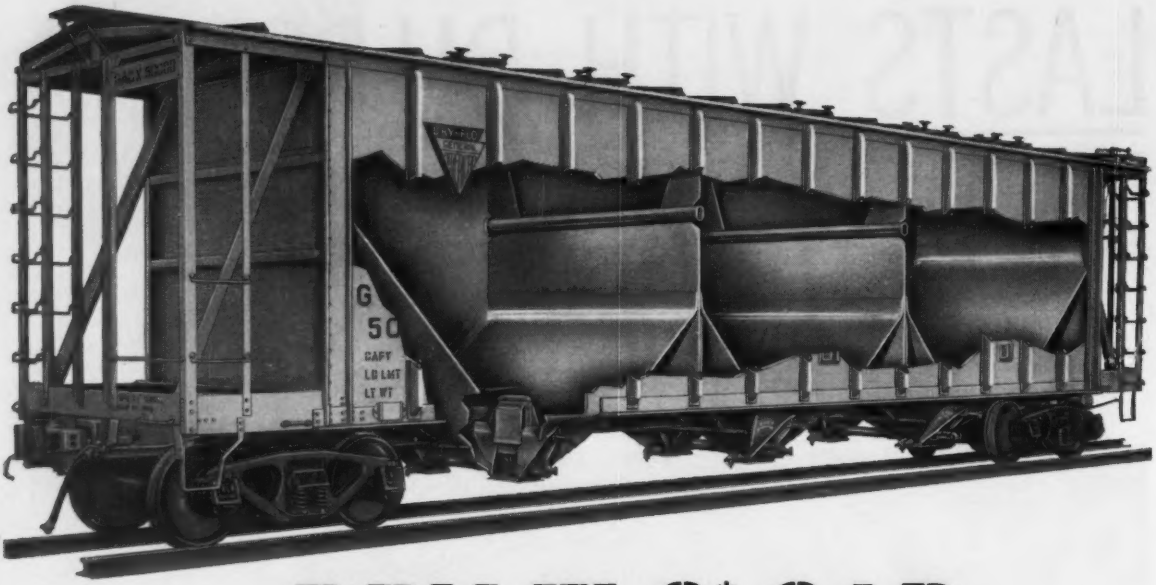
Company_____

Address_____

City_____ State_____

CIRCLE 121 ON READER SERVICE CARD 121

Ship Chemicals, Food Stuffs, Feed Ingredients in bulk in the New



DRY-FLO* CAR

General American's new Dry-Flo car brings the economies of bulk shipment to many dry, granular or powdered products which otherwise require bags, drums or containers.

Competitive in price with ordinary covered-hopper cars, the Dry-Flo car keeps the lading contamination-free and seals it from the outside air.

The Dry-Flo car can be loaded easily and quickly by either pneumatic or mechanical systems. Rounded hopper corners and clean interior lines eliminate hang-up points, insure complete discharge of product. Interiors can be coated.

All this adds up to important savings for shippers.

Consult us about *your* shipping problems. If you make, buy or sell dry, granular products, chances are you will profit from shipping by Dry-Flo car.

**Patent Rights Reserved*

IT PAYS TO PLAN WITH GENERAL AMERICAN

Dry-Flo Car Department

GENERAL AMERICAN TRANSPORTATION CORPORATION

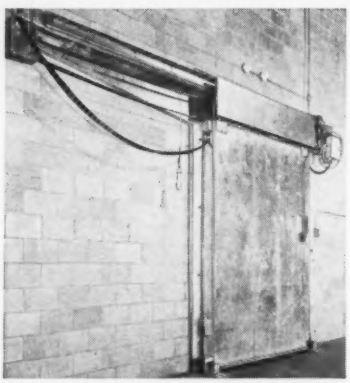
135 South LaSalle Street · Chicago 3, Illinois
In Canada: Canadian General Transit Co., Ltd., Montreal

DRY-FLO GENERAL AMERICAN TRADE MARK

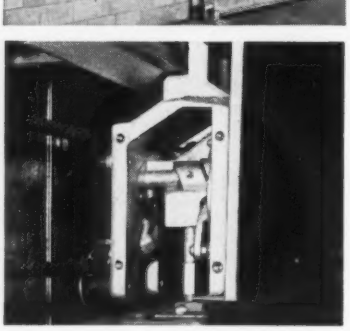
CIRCLE 123 ON READER SERVICE CARD→

Formula for perfect flavor! There are two ways to improve the quality and consistency of the flavors you use. Choose from Kohnstamm's unique collection of assorted flavors. Or have Kohnstamm researchers create a new flavor designed specifically for your needs. Call today and learn which way is best for you.

H. KOHNSTAMM & COMPANY, INC.
Established 1851
161 Avenue of the Americas, New York 13 / 11-13 E. Illinois St., Chicago 11 / 2632 E. 54 St., Huntington Pk., Calif.
Branches in other principal cities of the U.S.A. and throughout the world



FAST OPERATION of Electroglide Freezer Door saves refrigeration. Note Jamison Frostop® installed to prevent icing and freezing.



POSITIVE SEAL. When door reaches closed position, exclusive Jamison camming action forces door *in* and *down*.

Photos Courtesy: National Tea Company,
Council Oak Stores, Sioux City, Iowa
Insulator: Low Temp Insulations, Omaha, Nebraska

In-and-out freezer room traffic speeded up by Jamison Electroglide® Doors

The efficiency and economy of Jamison's new Electroglide Power Operated Door are assured by special Electroglide features—available in no other door.

RANGE OF TYPES—Available as bi-parting and single leaf right or left hand.

LEVEL RIDE—Door opens and closes without gasket drag or wear.

SAFETY—Full height safety edge reverses door instantly on contact.

EMERGENCY CONTROLS—Manual operation when power off; emergency release from inside when padlocked outside.

Get the complete story on Electroglide Cooler and Freezer Doors. Write today for new bulletin to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON
COLD STORAGE DOORS

JUST OFF THE PRESS

PLANT ENGINEERING

Multipass Condensers. Advantages and construction details of shell-and-tube models. Photos show installations. 12p.—Frick Co., Waynesboro, Pa. (388)

Submersible Pump, incorporating helical screw principle.—Continental Pump Co., St. Louis, Mo. (389)

Dust Control. Data on 8 cyclone separators. Includes multiple rating tables, specifications, dimensional drawing.—Torit Mfg. Co., St. Paul, Minn. (390)

Bronze Gate Valves. Illustrates maintenance-saving features. — Lunkenheimer Co., Cincinnati. (391)

Continuous Discharge Drainers. Discusses operation and applications. — Cochrane Corp., Philadelphia. (392)

Air Products. "Case histories" of motors, compressors, and vacuum pumps. 12p.—Gast Mfg. Corp., Benton Harbor, Mich. (393)

Air Conditioning. Describes evaporative condensers and ammonia compressors, with emphasis on minimum of floor space. — Kohlenberger Engineering Corp., Fullerton, Calif. (394)

Machinery. "Comic-strip" presentation of power generating, electrical transmission, processing, and distribution equipment with company history background. 32p. — Allis-Chalmers Mfg. Co., Milwaukee, Wis. (395)

Purifiers. Describes 13 models for solving gas, air, steam, and vapor entrainment problems. 8p.—V. D. Anderson Co., Cleveland. (396)

Purge Rotameters. Describes instruments for measuring and controlling fluids in 9 low flow ranges. 4p. — Schutte & Koerting Co., Cornwells H'ts, Pa. (397)

Variable Speed Drives. Details, photos of basic types, and suggested applications. 8p.—Sterling Electric Motors, Inc., Los Angeles. (398)

Adjustable Speed Drives. Discusses problems and typical applications. 8p.—Cleveland Worm & Gear Co., Cleveland. (399)

Flame Monitor. Highlights explosion safety factor of unit, and application flexibility. — Photomation, Inc., Bergenfield, N. J. (400)

Rubber Impellers. New designs said to have service life 1½ times longer than standard units. — Pacific Moulded Products Co., Los Angeles. (401)

Centrifugal Pump. Tells how to select proper unit for air conditioning systems. 16p.—Worthington Corp., Harrison, N. J. (402)

Tomato Canning. Describes trapless differential drainage system. 2p.—Stickle Steam Specialties Co., Indianapolis. (403)

Glassed Ductile Iron Fittings. Compares with mild steel and grey iron for tensile strength, thermal shock resistance, etc. — Pfaudler Co., Rochester, N. Y. (404)

Packaged Boilers. Introduces firm's new line of mechanical pressure atomizing oil-fired and partial pre-mixing gas-fired automatic units, sized 20-100 hp. 8p.—Orr & Sembower, Reading, Pa. (405)

PROCESSING

Filter. Discusses design, operation of disk-type units. 8p. — Dorr-Oliver Inc., Stamford, Conn. (406)

Continuous Mixer. Details unit for combining liquids, solids and liquids, gases and liquids, for ready flow through piping. 4p.—Nettco Corp., Everett, Mass. (407)

Sanitary Milk Tubing. Describes plastic product specifically developed for dairy field. 4p.—U.S. Stoneware Co., Akron, Ohio. (408)

Metal Detector. Lists features and application of unit 4p.—Radio Corp. of America, Camden, N. J. (409)

Roller Dryers. Details latest improvements to firm's line of dairy units. Gives dimensions, production rates, mechanical features, etc., of various models. 6p.—Blaw-Knox Co., Mora, Minn. (410)

Ultrasonic Homogenizers. Details advantages, new techniques and applications. Guide to mixing, dispersion,

too much vinegar...

spoils a salad ...and endangers a fine product's reputation

That's why makers of fine vinegars use WS snap-on liquid dispensers.

If proper dispensing is important to your product's acceptance, WS liquid dispenser fitments may be the perfect answer. Check with your WS salesman.

Check up on WS pouring rings, sifter tops, and custom-molded caps, too.

Write us or phone collect for full information or immediate service.

New York, N.Y.	Oxford 7-1346
Chicago, Ill.	Palisades 5-3020
Cleveland, Ohio	Academy 6-5757
Cincinnati, Ohio	Parkway 1-5736
St. Louis, Mo.	Parkview 7-7380
Los Angeles, Calif.	Pleasant 2-0791
Wheeling, W. Va.	Warwood 1540

WHEELING STAMPING CO.
WHEELING W. VA.
WSCO

The New CogMill

Now being used by leading food processors for—

SHREDDING and BLENDING cheese.

GRINDING spices, dates, soup stocks, dehydrated beef, chicken bones, and grinding Vienna bread into chunks, and, after drying, to crumbs.

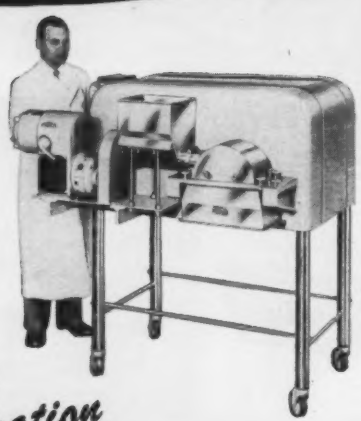
SPRAY BLENDING coffee oil into powdered coffee.

BREAKING horseradish roots and grinding while blending with vinegar.

CHOPPING
GRANULATING
PULVERIZING
DISPERSING

—wet and dry solids, liquids, pastes, emulsions and slurries, and combinations of these to desired consistency.

Permits uniformity of product and close control of color and taste.



Process without Contamination

Exclusive snap-apart design permits quick thorough cleaning of every product contact area, all of which are stainless steel. All operations are performed under dustless and liquid-tight conditions. Complete separation of bearings from the working chamber prevents oil or grease mixing with the product.

Models for manual or continuous feeding by 7½ to 20 H.P. motors. Jacketed inlet and outlet for—

TEMPERATURE CONTROL

Send for details, designating product to be processed and rate of production desired.

THE COG CORPORATION

Division of Matiograph, Inc. · Established 1896

4390 W. LAKE STREET · CHICAGO 24, ILLINOIS

A. TORRES EXPORT, INC. · 2550 W. Peterson Avenue · Chicago 45, Ill., U.S.A.

energy control, emulsification, etc. 8p.—Sonic Engineering Corp., Stamford, Conn. (411)

PACKAGING

Case Imprinters. Data on automatic models capable of imprinting 1-4 vertical panels of corrugated cases at various speeds, plus other useful information.—J. L. Ferguson Co., Joliet, Ill. (412)

Uniseal Bag. Details advantages of heat sealed Multiwall container for products formerly requiring fiber or metal drums. 4p.—Union Bag-Camp Paper Corp., N.Y.C. (413)

Packaging. Details automatic machine that makes fills, seals, and trims small plastic containers. 4p.—Hydro-Chemie, Conapac Corp., N.Y.C. (414)

Automatic Packager. Lists advantages of tube machine that forms, weigh-fills, heat-seals 40-44 bags/min. 4p.—General Packaging Equipment, Houston, Tex. (415)

Crown Handling. Do's & don't's for brewers and bottlers. Detail, with aid of cartoons, manufacture, use, storage, etc. Points out practices to avoid.—Crown Cork & Seal Co., Inc., Philadelphia. (416)

Blister Forming. Data on attachment for firm's skin-packaging or vacuum-forming machines. — Product Packaging Engineering, Culver City, Calif. (417)

Confectionery Packaging. Guide to cellophane types for variety of candy, chewing gum, nuts, etc.—American Viscose Corp., Philadelphia. (418)

MATERIALS HANDLING

Truck. Details new fiber glass box model for meat packing and other food plants.—Nutting Truck & Caster Co., Faribault, Minn. (419)

Lift Trucks. Manual describes new "centralized" control system that places all steering, shifting, and hydraulic control levers within 6 in. radius. 24p.—Towmotor Corp., Cleveland, Ohio. (420)

Centrifugal Pumps. Data on operation and selection of various models for dairy and other food fields. Includes capacity & friction loss charts, fluid viscosity tables, typical applications. 16p. — G&H Products Corp., Kenosha, Wis. (421)

Stream Splitters. Details unit that divides stream of dry, free-flowing material into 2-8 separate, uniform streams. 2p.—Sprout, Waldron & Co., Inc., Muncy, Pa. (422)

Pump. Describes air-operated free-piston model applicable to "anything that flows," such as ice cream, greases, syrups, etc. 4p.—Crossley Machine Co., Trenton, N. J. (423)

Warehouse Layout. Tells how new materials handling equipment can solve narrow-wide aisle problem and save dollars. 8p. — Automatic Transportation Co., Chicago. (424)

Dumping Equipment. Handy chart for selection of right machinery to handle loads to 5,000 lb. at heights to 50 ft. 6p.—Conveyors & Dumpers, Inc., West Caldwell, N. J. (425)

TRANSPORTATION

Refrigerated Bodies. Shows 21 types for delivery of milk, ice cream, frozen foods, and other perishable products, sized from ¾ ton largest trailer. 4p.—ALF-Herman Corp., St. Louis, Mo. (426)

Perishable Distribution. Details dependence of ultra-modern frozen food and meat packing industries on up-to-date transportation.—Little Audrey's Transportation Co., Fremont, Neb. (427)

MANAGEMENT

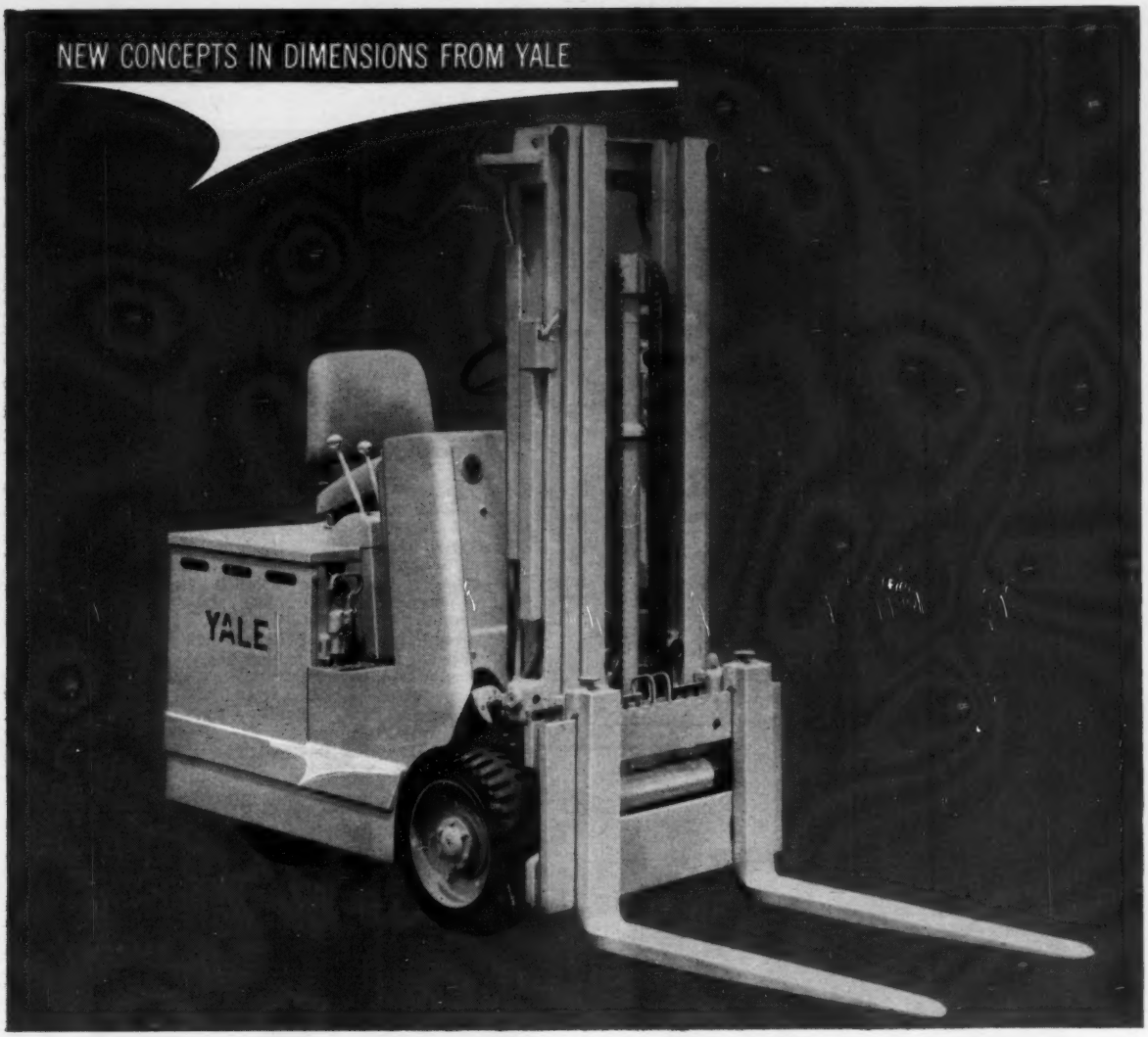
Auto Fleet Leasing. Breakdown of advantages and disadvantages. Includes charts analyzing costs of different fleet plans based on records covering 29,264 cars. 24p.—Foundation for Management Research, Chicago. (428)

Casting Alloys. Guide to major nickel-containing casting alloys details properties, applicable industries, general applications. Fold-out table pinpoints important properties. 27p.—International Nickel Co., Inc., N.Y.C. (429)

SANITATION & MAINTENANCE

Refuse System. Describes low-cost "containerized" equipment for private haulers, industrial plants, etc. 6p.—M-B Corp., New Holstein, Wis. (430)

Floor Cleaning. Discusses

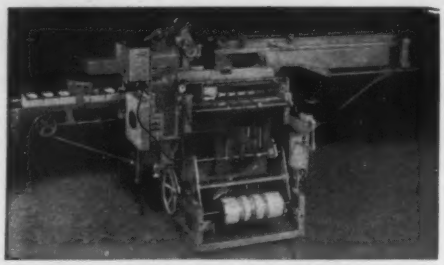


NEW YALE ELECTRICS • LOW • SPEEDY • MANEUVERABLE

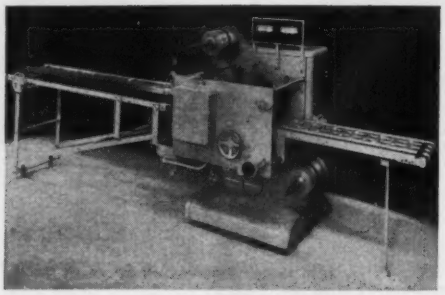
Mechanically actuated carbon pile for smooth speed control...produces infinite motor speeds to suit any operation cycle. Dual caster wheels mounted on ball bearings provide easy steering. Short turning radius. 71" height Triplex Mast available to give 144" fork height. Other features: hydraulic wheel brakes, removable battery box, H-I single lever control for multiple function attachments. Capacities: 2,000, 3,000 lbs. For full information, contact your Yale representative or write The Yale & Towne Manufacturing Co., Materials Handling Division, Philadelphia 15, Pa., Dept. KT4-V.

YALE®
INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS
YALE & TOWNE

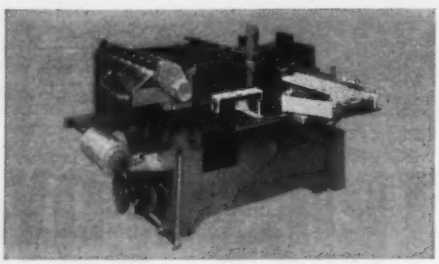
Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. **Products:** Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists



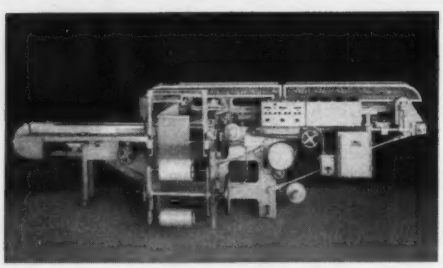
NOW YOU CAN HAVE TOMORROW'S OVER-WRAPPING MACHINE TODAY! Battle Creek's completely new Model 475 successfully handles more than 40 different formulations of soft plastic film . . . your assurance new plastic film developments will not outdate this machine. Change of films requires only electronic heat adjustment. Size changes are made in 15 minutes. Wraps up to 75 per minute within 5″ to 12″ lengths, 3″ to 8½″ widths and ¼″ to 4″ heights. Choose any of these films — polyethylene (medium, low and high density 1 mil and up), polystyrenes, heat sealing cellulose acetates, heat sealing foils, polyvinyl chlorides, cellophanes, polypropylenes or polymer coated films. **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**



CHANGE PACKAGE SIZES WITHOUT EXCESSIVE DOWNTIME! Handwheel controls for varying the pouch width, and a simple gear change for varying pouch length, — both made without disturbing the heat-sealing units — provide almost instant adjustability. Thin articles (not necessarily uniform in shape) are pouch packaged between two endless strips of heat-sealing packaging materials at speeds up to 80 per minute. Pouch sizes range from a minimum of 2″ x 2″ x 1/16″ to 27″ x 15″ x 1½″ maximum. The "Flexopaker" is especially applicable for articles in the textile, food, automotive parts, industrial products, hardware or similar industries. High speed "Continuous Flow" performance but with a low price tag. **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**



REDUCE COSTS . . . PROTECT PRODUCTS . . . IMPROVE DISPLAYS . . . PROMOTE MULTIPLE SALES with Battle Creek's new Model 850 Automatic Bundler. This machine bundles groups of packages . . . 4, 6, 8, 12 and 24 to a bundle . . . at speeds up to 18 per minute. One operator can easily keep pace with a packaging line as high as 180 per minute. Depending on construction selected, the machine bundles with kraft paper, polyethylene, cellophane and other films; in bundles within 5″ to 12″ long, 4″ to 10″ wide and 1″ to 8″ high. Used for textiles, paper items, drugs, chemicals, cosmetics, food products . . . and/or what have you? **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**



BATTLE CREEK'S NEW 51-CR WRAPS UP TO 130 FRACTIONAL PACKAGES PER MINUTE! A new high speed wrapping machine has been perfected to produce from 90 to 130 fractional packages per minute. Handles Cellophane (with or without polymer coatings); waxed glassine; or laminated foils. Converts quickly to the usual fractional package sizes, viz: square sodas, rectangular grahams, or rectangular sprayed crackers; in flat stacks. Can be equipped with pin type loaders. Forms a tightly contoured, snug overwrap that assures freshness and flavor retention. In spite of the high speed, the crackers are handled gently through all feeding and wrapping operations. **Battle Creek *"Continuous Flow"* Packaging Machines, Inc., Battle Creek, Michigan.**

soil removal problems in canneries, dairies, etc. Lists cleaning compounds, methods of sanitizing, stripping wax and paint, and absorbing liquids.—Oakite Products, Inc., N.Y.C. (431)

INGREDIENTS

Emulsifiers. Details advantages of dryness in ice cream, tells how to obtain it with company's Atmos 300. 16p.—Atlas Powder Co., Food Industry Dept., Wilmington, Del. (432)

Vanillin. Details usage of natural vanilla, and discovery of correct constitutional formula for vanillin, leading to various processes for producing flavor artificially. 8p. —Givaudan Flavors, Inc., N.Y.C. (433)

QUALITY CONTROL

Lab Demineralizer. Details unit designed to deliver water of measured low conductivity at full line pressure.—Permutit Co., N.Y.C. (434)

Sugar Determination. Data on continuous method employing firm's "AutoAnalyzer." 2p.—Technicon Controls, Inc., Chauncey, N. Y. (435)

INSTRUMENTS

Analog-to-Digital Recorder. Tells about punched-tape unit for recording flow, pressure, temperature, and other analog values. — Fischer & Porter Co., Hatboro, Pa. (436)

Microscopy. Describes firm's line of accessories for electron microscope, with prices and ordering information.—Ernest F. Fullam, Inc., Schenectady, N.Y. (437)

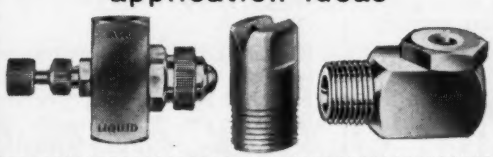
Counters & Controllers. Describes transistorized units designed especially for food processing. — Electro Mechanisms, Fullerton, Calif. (438)

Mercury Switch Cutoffs. Details units to control feeders, for weighing of solids and liquids.—Detecto Sales, Inc., Brooklyn, N. Y. (439)

Free Literature— Fast Way

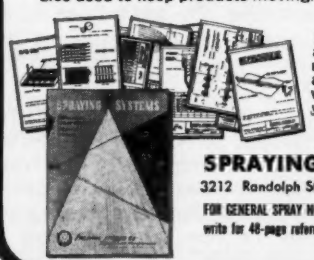
Any of these very latest catalogs, bulletins, or folders will be sped to you gratis. Just note here the specific literature you want, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service postcard — back of book. Then sign your name and address and mail.

some
SPRAY NOZZLE
application ideas



for lower cost, better production

- use pneumatic atomizing nozzles on fruit and nut packaging lines for automatically opening bags and placing fumigant.
- you can add water to dry foods by spraying in precise form and quantity for exact control of moisture content.
- if you have a roof heat problem over ovens in summer, roof cooling spray nozzles will reduce temperatures as much as 18° F.
- clean transport truck tanks with spray nozzle heads . . . eliminate costly hand cleaning.
- where water is used anyway and where products will float, a water trough conveyor is an idea, with spray nozzles used to keep products moving.



DATA SHEETS are available on a wide range of spray nozzle applications. Just write and describe your particular need.

SPRAYING SYSTEMS CO.
3212 Randolph Street • Bellwood, Illinois
FOR GENERAL SPRAY NOZZLE INFORMATION . . .
write for 48-page reference Catalog No. 24.

CIRCLE 235 ON READER SERVICE CARD

Sheftene Sodium and Calcium Caseinates improve the quality of your product line in either, or both, of these basic ways:

I

SHEFTENES are a source of high-quality milk proteins, with an abundance of lysine and tryptophane. As such, they are unsurpassed for improving the protein quality of foods—wheat and grain products particularly.

II

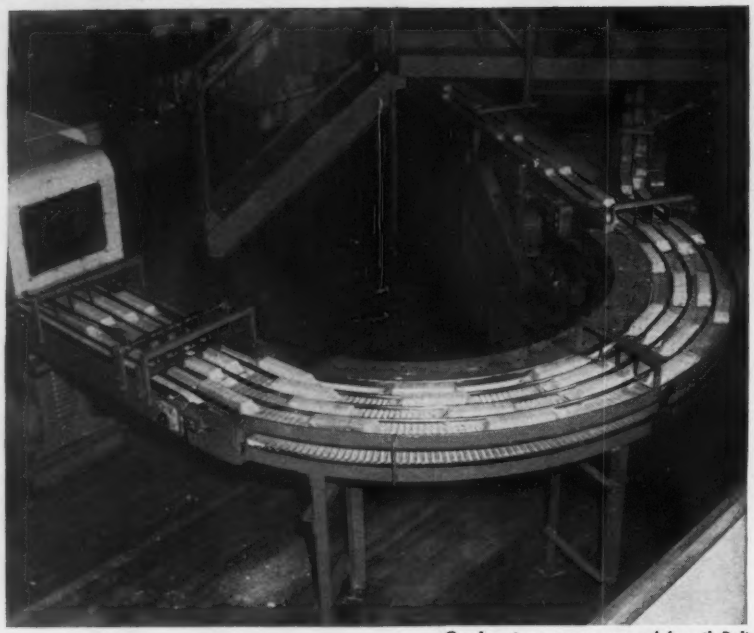
SHEFTENES are versatile *functional* ingredients. They are used — efficiently and economically — to enhance the texture, appearance and shelf-life of bakery, cereal, dairy, meat products, beverages, infant foods and many others.

SHEFTENE products come in powder form, are soluble and possess no marked flavor or odor characteristics of their own. Write today for samples and technical data to Dept. FE-99.

SHEFFIELD CHEMICAL
Norwich, N.Y.
A DIVISION OF NATIONAL DAIRY PRODUCTS CORPORATION
Western U.S. distribution through
Van Waters & Rogers, Inc. — Seattle, Spokane, Portland, Dallas, Houston
Braun-Knecht-Heimann Co. — San Francisco, Salt Lake City, Denver
Braun Chemical Company — Los Angeles, San Diego, Phoenix, Albuquerque, El Paso

CIRCLE 129 ON READER SERVICE CARD

Industry Moves



Crackers turn corners on an Ashworth Belt

on Metal Process Belts by ASHWORTH

Every industry has its product flow problem; frequently, it's one of "getting around a corner". Around the corner or straightline travel . . . whether it's crackers, popcorn, candy or nuts and bolts . . . there's an Ashworth Metal Process Belt to solve the problem.

Fabricated from any metal capable of being formed into wire, Ashworth belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go—Ashworth Belts will help you effect economies and . . . keep your product on the move.

Illustrated literature available

ASHWORTH BROS., INC., WINCHESTER, VIRGINIA

SALES ENGINEERS: Atlanta, Baltimore, Boston, Buffalo, Charlotte, N. C., Dallas, Detroit, Fall River, Mass., Greenville, S. C., Louisville, New York, Philadelphia, Pittsburgh, Rochester, St. Louis, St. Paul, Tampa, Canadian Rep., Peckover's Ltd., Toronto, Montreal.

CIRCLE 130 ON READER SERVICE CARD

ANOTHER FE SERVICE—MORE FACTS

Free copies of new literature
on Packaging, Equipment, Supplies, Ingredients
and Services

Note key numbers following editorial items and advertisements. Circle this number on the Reader Service Card (at back of this magazine). Mail and we do the rest. Also note our free editorial reprint offer on Reader Service Page.

USEFUL NEW BOOKS

Your Men and Unions

HANDBOOK OF PERSONNEL MANAGEMENT AND LABOR RELATIONS by *Dale Yoder, H. G. Heneman, Jr., J. G. Turnbull, and C. H. Stone. Published by McGraw-Hill Publishing Co., 330 W. 42nd St., New York City 36. 1958. 1,216 pages. Price:* $12.50.

This useful manual covers the two broad fields of manpower management: dealing with employees and dealing with unions. It covers all phases of the relationships, from recruiting to retirement.

The authors, all experts in the field, have blended the theoretical, practical and technical in their evaluation of how management must deal with personnel.

Throughout the entire book, the approach is professional, guaranteeing a realistic view of requirements, obligations, and opportunities.

Booklets & Reports

INTERSTATE TRUCKING OF FROZEN FRUITS AND VEGETABLES UNDER AGRICULTURAL EXEMPTION *(Marketing Research Report No. 316). Published by the U. S. Department of Agriculture, Washington 25, D. C. 88 pps.* Report on the effect of the exemption.

BACTERIAL FOOD POISONING AND ITS CONTROL. *(Bulletin No. 493). Published by College of Agriculture, University of Massachusetts, Amherst, Mass. 39 pp. Price: 10¢* Preventing poisoning by staphylococcus salmonella, streptococcal bacteria, or other organisms.

CHECKING PREPACKAGED COMMODITIES *(Handbook 67), published by U. S. Department of Commerce, Washington 25, D. C. 27 pp. Price:* 35¢. Manual for Weights and Measures officials.

FOOD VALUES AND CALORIES CHART *published by Jules G. Szanton, New York City 63. 1958 Price:* $1.00. Listing of food composition and vitamin content of more than 900 foods.

N.F.B.A. COVERS THE COLD FRONT. *Published by National Food Brokerage Association, 1916 M North West, Washington 6, D. C. 16 pp. No charge.* Booklet presents a program for new sales campaigns for frozen foods.

CIRCLE 131 ON READER SERVICE CARD→

Colonial Stores, Inc., use hundreds of trucks in their 473-store grocery operation covering eleven states. The job of hauling tons of coffee beans from shipside at Norfolk, Va., to the roasting ovens in Atlanta was entrusted to this Mack B-61 tractor. It clocked an amazing 503,438 miles before the head or pan was taken off the engine. Today, looking almost like new, it is working its way toward the million-mile mark.

How you can bring truck upkeep down...

Over 500,000 miles at less than $.003 per mile

Maintenance cost records are a basic measure of truck performance, and the records of Colonial Stores, Inc., Atlanta, Ga., tell a revealing story about the upkeep cost of Mack trucks. Take, for example, the Mack Thermodyne® diesel tractor that has been handling their tough 1200-mile Norfolk express run since the spring of 1955.

Despite the steady day-in, day-out pounding this Mack received, it was not until this spring, after 503,438 miles, that the engine received its first overhaul. Maintenance records showed oil use averaged only one quart every 1300 miles, and bearing wear was found to be negligible. Upkeep for four full years, and half a million miles, including all parts and labor, figured out to less than *a third of a cent a mile.*

Records like these are of utmost importance to everyone who needs dependable, economical truck transportation. They prove that Macks can be confidently assigned to your most important loads and routes with the assurance of on-schedule deliveries and trouble-free, low-upkeep operations . . . with only routine maintenance and downtime.

Contact your Mack branch or distributor for the names of Mack owners near you who can show how Macks have paid off in their operations. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

7128-A

MACK
FIRST NAME FOR
TRUCKS

MACK for over 6 straight years NO. 1 by far in sales of diesel trucks

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL

	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

RECENT INVENTIONS

PRODUCTS

Maple Syrup Flavor—Enhanced by Inculating Sap With Selected Bacteria and Yeast, Then Evaporating. — USDA. No. 2,880,094.

Egg Albumen Having Angel Cake-Making Properties.—Leo Kline, National Dairy Products Corp. No. 2,881,077.

Puckered, Curled Cereal Flakes Made by Heating Grain 5 Min. From 100-350F. and Then Flaking.—J. L. Holahan, General Mills, Inc., Minneapolis. No. 2,882,162.

Cake Shortening Containing Acetylated Monoglycerides.—A. F. Gehrke, Pillsbury Co., Minneapolis. No. 2,882,167.

Cheese-Flavored Salad Dressing Made by Blending Oil, Dilute Acetic Acid and Fluidized Cheese Into Emulsion.—A. J. Rossi, Chicago. No. 2,882,168.

Bread-Like Baked Goods From Water-Treated Ground Cereals That Are Aerated and Irradiated.—R. Lubig, Bonn am Rhine, Germany. No. 2,883,285.

Chocolate Foam Topping by Expelling and Aerating Mix Under Pressure.—J. C. Musser, Klein Chocolate Co., Elizabethtown, Pa. No. 2,883,286.

Precooked Starch Freed of Rancid and Starchy Flavors by Treating With Sequestering Agent.—J. A. Korth, Corn Products Co. No. 2,884,346.

Emulsified Salad Dressings Containing Chelating Agent.—R. J. Stapf, Kraft Foods Co., Chicago. No. 2,885,292.

PROCESSING

Tenderizing Beef Diathermally by Internal Heating to About 105F. for 3¼ Min.—Hodges Research & Development Co., N.Y.C. No. 2,870,018.

Steam Blanching Foods So Nutrients Collected in Condensate Are Restored to Products.—Carrier Corp., Syracuse, N. Y. No. 2,870,020.

Preventing Struvite Formation by Introducing Aluminum Sulfate Into Thermally Treated Seafoods. — Blue Channel Corp., Port Royal, S. C. No. 2,870,025.

Clarifying Beverages With Haze-Inducing N-Vinyl-5-Ethyl-2-Oxazolidinone Polymer.—Dow Chemical Co., Midland, Mich. No. 2,872,321.

Concentrating Aqueous Coffee Extract Under Oxygenous Atmosphere. — Ramon Perech, N.Y.C. No. 2,872,323.

Preparing Cake Mix by Bonding Fragmented Sugar to Flour and Coating With Shortening—Procter & Gamble, Cincinnati. No. 2,874,053.

Making Sausage Emulsion by Cutting and Cooling Space-Suspended Meat.—W. J. Fitzpatrick Co., Chicago. No. 2,874,054.

Preserving Cut Apples by Treating in Aqueous Salt-Fruit-Acid Solution and Partially Dehydrating.—USDA. No. 2,874,059.

Freeze-Grinding Meats and Dissolving Released Myosin in Salt Going Into Ground-Meat Formula.—Oscar Mayer & Co., Chicago. No. 2,874,060.

Curing Meat With Nitrate-Nitrite Solution in Presence of Ascorbic Acid, Alkali Metal Bicarbonate and Glutamate.—S. Klein, Newark, N. J. No. 2,875,068.

Preserving Color of Green Vegetables by Immersing in Alkaline Solution Which Is Also Added to Interior Can Coating. — Patent Protection Corp., N.Y.C. No. 2,875,071.

PACKAGING

Cartoner Having Paperboard Box Set Up, Container Assembling-Inserting and Carton Sealing Stations.—Federal Paper Board Co., Bogota, N. J. No. 2,873,565

Edible Oil Container Having Threaded Portion of Spout Coated With Alkali Metal Dihydrogen Orthophosphate Salt.—Procter & Gamble, Cincinnati. No. 2,871,130.

Water-Impervious Poultry Pouch With Perforated Base, Designed to Fit in Rectangular Box.—Armour & Co., Chicago. No. 2,871,131.

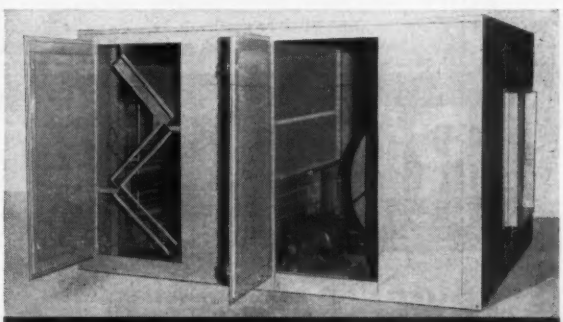
Aseptically Sealing Containers by Directing Steam and Steam-Air Into Headspace Prior to Sealing. — Anchor Hocking, Lancaster, O. No. 2,869,300.

KLIMATIC KING

Solves the Humidity Problem at Cass Clay Creamery, Inc.

The Cass Clay Creamery Company of Fargo, North Dakota has utilized a variety of King equipment in its new ultra-modern 85,000 square foot plant. Included are Klimatic King units, a King Sharp Freeze unit and King Exhaust Ventilators.

The heating and ventilating as well as humidity control was achieved through use of Klimatic King conditioning units which have been specially designed for dairy, ice cream and food processing plants.



Standard Klimatic King has galvanized steel, completely insulated cabinet, automatic controls and two-speed motor for operating economy. Can be used for cooling with the addition of a cooling coil . . . sizes 3,500 to 20,000 CFM.

Klimatic King units and King Exhaust Blowers are both installed on the roof . . . thereby conserving valuable space in the processing areas.

Write for detailed technical and information bulletins.

KLIMATIC KING *Manufacturers of* King *sharp freeze,* COMPANY OF OWATONNA
905 North Cedar St. • Owatonna Minn.
cooling, ventilating and heating systems.

du Verre

CONSTRUCTION GIVES COMPLETE CORROSION CONTROL . . .

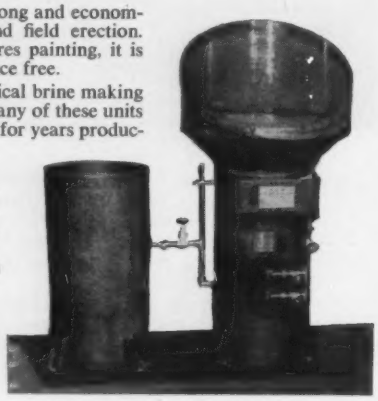
and contamination-free products

Why risk product contamination when du Verre fabricated Ducts, Hoods, Tanks and Open Vessels are completely inert to virtually all food products. Unlike coatings or linings, du Verre resin bonded Fiberglass is homogeneous in structure giving protection inside and out!

du Verre is light, strong and economical in first cost and field erection. Since it never requires painting, it is clean and maintenance free.

Shown right is a typical brine making unit by du Verre. Many of these units have been in service for years producing clean pure brine for the food processing industry.

Let us show you how du Verre can improve your food processing operation for contamination-free, trouble-free service. Write for Bulletin No. 100.



du Verre inc.

duVerre, Incorporated

Box No. 37-C • Arcade, N.Y.

CIRCLE 236 ON READER SERVICE CARD

Expandable, Contractable Polyethylene Tube to Prevent Splitting and Facilitate Slicing of Packaged Cookie Dough Mix.—H. R. Anderson, Cress-Kill, N.J. No. 2,870,022.

Heat-Sterilized Preservation of Products in Sealed Containers.—James Dole Eng. Co., San Francisco, Calif. No. 2,870,-024.

Lining Crates From Roll-Fed Paper Stock. — Food Mach'y. & Chemical Corp., San Jose, Calif. No. 2,871,-773.

EQUIPMENT

Unit for Pressure-Forming Cheese Into Ball-Like Shape.—H. A. Schwartz, Cheese Mach'y Co., Sheboygan, Wis. No. 2,879,593.

Wobble Disk for Fruit-Sizing Machine.—R. L. Miller, Utica, Mich. No. 2,879,888.

Rotating Drum With Beater Vans for Removing Shells From Crabs and Shrimp.—W. F. B. Peuss, Dorumer-Strich uber Wesermunde, Germany. No. 2,879,538.

Electrical Poultry Stunning System.—C. M. Cervin, Minneapolis. No. 2,879,539.

Sugar Drying-Cooling System Comprising Preliminary Rotatable and Secondary Driers.—Buttner-Werke Aktiengesellschaft, Krefeld-Uerdingen, Germany. No. 2,869,248.

Egg Grader Comprising Paired Scales to Weigh and Discharge Eggs of Different Weights.—R. S. Davis, Otsego, Mich. No. 2,872,040.

Comminutor Comprising Product-Delivery Pump, Chamber With Bladed Rotor and Steam-Pressure Connection.—W. J. Fitzpatrick Co., Chicago. No. 2,873,663.

Fowl Deheader Having Guide Frame and Circular Rotatable Cage.—B. J. Boykin, El Dorado, Ark. No. 2,874,402.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

FREE!

SERVICE CAP

Paperlynen Caps are ADJUSTABLE to any headsize. Insure perfect fit. Light and comfortable. More ECONOMICAL. Reduce your present Cap expense by 50%. Distinctive with your special imprint. Millions used annually by nationally known companies. Just mail coupon below with manager's signature and we will send you absolutely FREE, a Patented Adjustable Paperlynen Service Cap.

PAPERLYNEN COMPANY
555 West Goodale St., Dept. G-9, Columbus, Ohio
Please send absolutely FREE, a Patented Adjustable Paperlynen Cap.

Firm Name_____

Address_____

City_____ State_____

Signature of Manager_____

Name of Paper Jobber most frequently patronized:

_____

CRISIS CRISIS CRISIS

Will the new FOOD & DRUG LAW throw packaging into a turmoil?

The new Food & Drug Law Amendment requires that *any additive directly* or *indirectly* affecting the characteristic of *any food* must be approved by the Food and Drug Administration. This includes *packaging materials.* ■ What will this mean to food processors and packagers?...to packaging material manufacturers? ■ What extractability tests must be made to obtain F&DA approval? ■ What costs are involved *and who pays?* The answer to these and dozens of other vitally-important questions are contained in a complete interpretive report by the editors of MODERN PACKAGING. For your copy of this fact-filled 20-page report, send $1.00 to MODERN PACKAGING, Room 305, 575 Madison Ave., New York 22, N. Y. (Bulk rates available upon request.)

MP

MODERN PACKAGING

575 Madison Avenue, New York 22, N. Y.

A BRESKIN PUBLICATION

Authority of the Field for Thirty-Two Years

CIRCLE 237 ON READER SERVICE CARD

CIRCLE 134 ON READER SERVICE CARD

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

DISPLAYED RATE

The advertising rate is $16.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

EMPLOYMENT OPPORTUNITIES—$37.00 per inch subject to agency commission

INFORMATION

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

An ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page

UNDISPLAYED RATE

(Not available for Equipment Advertising) $1.80 a line. Minimum 3 lines. To figure advance payment count 5 average words as a line. (See ¶ on Box Numbers.)

POSITION WANTED undisplayed rate is one half of above rate, payable in advance.

BOX NUMBERS count as one additional line.

Send New ADS or Inquiries to Class. Adv. of Food Engineering, P. O. Box 12, New York 36, N. Y., For October Issue Closing September 24

TECHNICIANS

2-5 years experience in baking technology or as a chemistry technician in food or cereal laboratory.

Please send reply in confidence to
Box **P-2290,** Food Engineering
Class. Adv. Div.,
P. O. Box 12, N. Y. 36, N. Y.

FOOD TECHNOLOGIST or CHEMICAL ENGINEER

TO $8,000 YEAR

College grad, min. 3-4 yrs industrial exp, for product development in medium-sized N.Y. research & development laboratory. Send resume of education, exp, refs, **Box FE 466, 125 W 41 St, NY**

SEARCHLIGHT EQUIPMENT LOCATING *SERVICE*

No Cost or Obligation

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate rebuilt and used Food processing equipment not currently advertised. (This service is for USER-BUYERS only.)

How to Use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment and/or components wanted on the coupon below, or on your own company letterhead to

SEARCHLIGHT EQUIPMENT LOCATING SERVICE
FOOD ENGINEERING
Classified Advertising Division
P.O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Locating Service
c/o Classified Advertising
Food Engineering
P.O. Box 12, N. Y. 36, N. Y.

Please help us locate the following equipment:

.....
.....

NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY .....ZONE....
STATE .....

9/59

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS WANTED

Pickle man possesses complete production knowledge, techniques and experience in both processed and fresh pack type pickle operation. Can manage help. Proved record of accomplishment. Desires a position of responsibility with progressive firm. PW-2169, Food Engineering.

Food Technologist—B.S. with 7 years of extensive and responsible experience in technical service: quality and production control in diversified food processing. Desires challenging position preferably in product development, technical service or quality control. Metropolitan NYC area, or Northern New Jersey. Reply PW-2503, Food Engineering.

Production Supervisor—B.S. Food Technology, 5 years with present employer—one of country's largest mfrs. of beverages, preserves. Experienced in quality control, processing and packaging. Strong in cost reduction, equipment maintenance and sanitation. PW-2487, Food Engineering.

AARON'S

HARD TO BEAT VALUES

- 8 100 Gal All SS Kettles
- 12 Groen 80 Gal SS Kettles
- 1 Food Mach 6 pack Juice Filler for #10 cans, 1 yr old
- 1 ABC Mod XSH Case Sealer
- 1 ABC Mod XSSA Semi-Auto Top & Bot Case Sealer
- 1 10' x 6" dia SS Scr Conveyor w/Mtr
- 1 2 Ton Cap Gruendler Blender w/Mtr

WANTED SURPLUS EQUIPMENT—Single Items or Entire Plants

Our New Plant & Warehouse now at 9370 Byron St., Schiller Park, Ill. All Phones Gladstone 1-1500

AARON EQUIPMENT CO.
Division Of ARECO, INC.

WE ARE MOVING
VALUES GALORE—BUY NOW

1—S.S. Kettles 40-150 Gallons.
2—Day D-10 Spiral Mixers 1000#.
1—Horiz. Sterilizer 42"x48"x96".
1—MRM—10 stem Vac. Filler, S.S.
1—Day 20 Gal. Monel, Jack. Sigma Blade Mixer.
1—S.P. 1 Gal. S.S. Jack. Sigma Blade Mixer.
2—Copper Conical Blenders 500# Each.
1—Resina Capper 28 to 53 mm. Caps.
1 #429 Standard Knapp Gluer & Sealer.
1—Syntron S.S. Vibroflow Feeder FO-6-9202. Type F-45.
1—Jeffrey Trayler S.S. Vibrating Screen 30"x68" Double Deck.
New S.S. Blenders, Kettles, Tanks.
Send for Bulletin A-43 for complete listings.

THE MACHINERY & EQUIPMENT CO.
293 Frelinghuysen Avenue, Newark 12, N. J.
TAlbot 4-2050.

CONSUMER PRODUCTS WANTED

Nationally known $20,000,000 food manufacturer looking for new or established consumer products having peak demand during hot weather which lend themselves to present channels of distribution (supermarkets & wholesale grocers, drug & department stores, chain syndicates, candy & tobacco jobbers, and vending machine operators). Flexible re acquiring product or company, with or without principals, for cash, stock, royalty, etc.

Box No. **W-2317,** Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONVEYOR

Troughing type canvas belt conveyors for moving powders, foodstuffs, chips, chemicals, small parts, etc. Conveyor is 400' long, belt is 30" wide x ¼" thickness (good condition). Steel cat walk runs along entire length of conveyor. Drive is by 25 HP motor.

CHARLES LAURANCE, INC.
P. O. Box 689 Weehawken, N. J.

U. S. Bottle Machinery Co. of Chicago, Ill.

1—**16 Head Rotary Filler & Pasteurizer & 4 Head Crowner.** 120 BPM 6-7 oz. Bottles. Purchased new June, 1946 Model G.F.C. #164. Serial #110. **Price $2,200.00.**

1—**Single End Heil Washer,** 6-7 oz. 12 wide Soaker, 120 BPM. Purchased new, June, 1946. **Price $800.00.**

This was in operation five years as a Tru-Ade filling line and is in perfect condition. Need the space, so must sell.

Siegler Bottling Co.
P. O. Box 7, Dayton View Station
2400-2422 N. Gettysburg Ave., Dayton 6, Ohio

IN STOCK AT LOEB'S . . . .

Cappers: Rosina, Pneumatic Scale Swanson, Capem.
Centrifugals: Fletcher 12" Tolhurst 20" rubber.
Centrifugal: Tolhurst 20" type 316 st. st.
Clarifiers: De Laval and Sharples, st. st.
Crystalizers: 350 gal. st. st. jkt. agit.
Disintegrators: Rietz RD 10-P, steel, 75 hp.
Dryers: Link Belt Mono Tube monel.
Dryers: Devine 2 x 4 vac. drum st. steel.
Dryer: Stokes vacuum 2-shelf model 51.
Filler: Pfaudler 12 pocket juicer, st. steel.
Fillers: liquid vacuum, siphon, gravity.
Fillers: Stokes, Colton, Elgin, Geyer, M&S.
Fillers: powder Speedeo, Triangle, Stokes & Smith.
Filler: Geyer 6 spout stain. steel.
Filter Presses: Sperry, Shriver 6"-36".
Filters: Int. pressure—Alsop, Sparkler, Lomax.
Gluer, carton: Stand Knapp, Ferguson, Triangle.
Homogenizers: 25, 60, 125, GPH.
Kettles: Dopp 150 gal., jkt. 20 hp s.s. agit.
Kettle: 300 gal. st. steel agitated.
Kettles: Stain Steel with or without agitators.
Kettles: 20 gal. Green gas fired, st. steel (New).
Labelers: Burt, Standard-Knapp, N. J. Pony Labelrites, Pneumatic Scale duplex.
Labeler: World auto. straightaway.
Mills, hammer: Mikro, Gump Prater, Raymond JayBee, Jeffrey, Williams, Fitzpatrick.
Cog stain. steel. 10 hp.
Mixers, dough type: single and double arm.
Glen Power Plus 340-qt. 5 hp.
Powder: 50 to 2000 lb. capacity.
Buffalo: #5 st. st. vacuum, 15 hp.
Mullers: Simpson Lab., Porte #00.
Pan, Vacuum: Harris 42, stain. steel.
Pasteurizers: Cherry Burrell 200 gal., 300 gal.
Percolators: Pfaudler 54 x 42" stain. steel.
Pumps: Centrifugal, rotary, gear, vacuum.
Presses: Davenport 3A dewatering cont.
Tablet Presses: Single punch and rotary.
Tanks: Stain. steel 25 gal. to 1200 gal.
Tank: Pfaudler 2500 gal. glass lined.
Vacuum Tank: 3500 gal. st. steel.

Send us your inquiries and list of idle equipment

LOEB EQUIPMENT SUPPLY CO.
820 WEST SUPERIOR ST. • TELEPHONE SEeley 8-1431 CHICAGO 22, ILLINOIS

LATE MODEL PACKAGE MACHINERY

Package Machinery, Model FA, Electric eye and tear tape attachment.
Package Machinery, Models FA, A2, F10J Bundler also Hayssen, Scandia.
Resina Capper, High Speed and Single.
Pneumatic Straight Line 20 Head Filler.
Pneumatic, Pony, World Labelers.
Horix, Karl Keifer, Ertel Fillers.
Pneumatic Scale High Speed Cartoning Line (also 30 CPM)
Standard Knapp #29 Case Sealers.
Standard Knapp High Speed Can Labelers.

PRECISION REBUILT and GUARANTEED

RPM INC. 43 - 34TH STREET BROOKLYN 32, NEW YORK STerling 8-1550

REMOVAL SALE

MOVING TO NEWARK, N. J.

Prices Slashed 20 to 50% on all Warehouse Stock

SPECIALS

1—Buflovak 250 sq. ft. 304 S.S. single effect forced circulation Evaporator
1—Harris 3' dia. 304 S.S. single effect Evaporator with coils.
1—Wyssmont 304 S.S. Turbo Dryer 6'2" x 10'4" high 24, shelves.
1—Blaw-Knox 1000 gal. 347 S.S. jacketed, agitated Reactor.
1—Bird 18" x 28", 316 S.S. solid bowl, continuous Centrifuges.
1—Sparkler 33825 Pressure Filter, 304 S.S.
1—Niagara 36H-110-3 Pressure Filter, 304 S.S.
2—Buflovak 42" x 120" atmospheric double drum Dryers.
4—Sweetland Filters, #7, #10, #12.
1—Devine Vacuum Shelf Dryer, 10—40" x 43" shelves.
1—Abbe, 1,000 lb. aluminum Power Mixer, 7½ H.P. motor.
1—Fitzpatrick Comminuting Machine, Model D, 7½ HP.

BRILL EQUIPMENT COMPANY
2401 Third Ave., New York 51, N. Y.
OR
4101 San Jacinto, Houston 4, Texas

MODERN PACKAGING EQUIPMENT

Savings: 50% and more
LESS THAN 10 YEARS OLD

• *SPECIAL* •

PNEUMATIC SCALE CO. Medium Double Package Makers
PNEUMATIC SCALE CO. Heat Seal Tea Bag Machines with Taggers, Counters and Stackers.
PNEUMATIC SCALE CO. High Speed Cartoning Lines—Feeders, Bottom Sealers, Rotary Fillers & Top Sealers.

PNEUMATIC SCALE CO. Synchronized Liquid Filling Line consisting of: Invert type Air Cleaner, 20 Spout Stainless Steel Filler, 4 head Rotary Capper, Duplex Labeler.
CARTER VACUFLOW. Model B, 16 Head Stainless Steel Powder Filler including 5 H.P. Nash Hytor Vacuum Pump . . . Also, Carter Vacuflow, Model B, 4 Head Stainless Steel Powder Filler.
RESINA, CAPEM, PNEUMATIC: 1, 3 and 4 Head Cappers.
PACKAGE MACHINERY, Models FA and FF, Wrappers.
KARL KIEFER, 24 Spout Stainless Steel Rotary Vacuum Filler, synchronized to Karl Kiefer Bottoms-Up Rotary Bottle Cleaner with worm infeed.
BATTLE CREEK, Model #46, Wrapping Machine, equipped with Oliver Heat Seal Label Attachment.
TRANSWRAPS, Models A and B.
FERGUSON PACKOMATIC CARTONING LINE.

Partial List—Send for complete list of equipment in stock

TOP PRICES FOR SURPLUS PACKAGING EQUIPMENT

ALLIED EQUIPMENT CO.
940-946 Nepperhan Ave., Yonkers 3, N. Y.
Phone: Yonkers 5-0442

SEPTEMBER SPECIALS

Resina Automatic Capper, model RU-120-146
U. S. Rotary SS 22 spt. Vac. Filler, #592, 120 pm
Standard-Knapp Can Labelers, all sizes, 120 pm
World Twin Turret Labeler #C10006, 120 pm
Star & Hercules 20 & 50 Disc Filters
M.R.M. Rotary SS 12 Spt. Vac. Filler
Langsenkamp Super Finisher or Pulper
Elgin 2 spout SS Piston Filler #5404
F.M.C. 12 pk't. SS Can Filler #120-MC160

WE BUY COMPLETE PLANTS OR SINGLE UNITS
WHAT HAVE YOU FOR SALE?
You Can Bank On

EQUIPMENT CLEARING HOUSE, INC.
111 33 Street, Brooklyn 32, N. Y.
SOuth 8-4451—4452—8782

BARGAINS FOR SALE

The Ruderman Machinery Exchange of Gouverneur, N. Y., one of the larget diversified Machinery & Equipment Dealers in America, can furnish you with practically all your needs in Modern Ice Cream, Milk Plant and Electrical Equipment at but a fraction of the original cost.

WRITE—WIRE—PHONE FOR YOUR NEEDS

RUDERMAN MACHINERY EXCHANGE
Gouverneur, New York Telephone 333-334

FOR SALE

Hayssen Model 5-9 Automatic Wrapper
Model MPUS-15 Miller Wrapper
Model MPUS-17 Miller Wrapper & Sheeter
100 Gal. Copper Steam Jacketed Mixing Kettle
300 Gal. Copper Still with Condenser and Tank
100 Gal. Read Jacketed Double Armed Dough Mixer

SAVAGE BROS. CO.
2838 Gladys Ave. Chicago 12, Ill.

8,000 gal. stainless Vertical Tank.
1,000 gal. 750 gal. stainless sanitary Vertical Tanks.
1,500 gal. stainless sanitary Vertical Vacuum Tanks with coil.
(4) 7,750 gal. and (6) 4,650 gal. horizontal lastiglas lined all welded Tanks.
500 gal. stainless sanitary Mixing Tank with agitator.
(4) Shell and Tube Heat Exchangers 65 to 250 sq. ft. Stainless sanitary.
Atmospheric Double Drum Dryers, 42" x 120", 42" x 90", 32" x 72", 32" x 90", 32" x 120".
6 ft. and 5 ft. dia. Stainless Vacuum Pans with condensers and pumps.
2,875 gal. and 2,500 gal. stainless sanitary truck tankers, insulated.

BEST EQUIPMENT COMPANY, INC.
1737 W. HOWARD ST. CHICAGO 26, ILL.
AMbassador 2-1452

BUY WITH CONFIDENCE

3—Ribbon blenders, 1000, 1200, 2000 lbs. cap.
2—Allis Chalmers 7 deck gyratory box sifters, 30" x 30".
3—Stainless steel jacketed and agitated kettles, 40 gallons, 50 gallons and 80 gallons.
1—Southwark 5 barrel jacketed Ben Franklin mixer.
2—Fitzpatrick comminuters models D and K.
2—Day Stainless steel double arm mixers, 20 gallons, 35 gallons.

CHEMICAL & PROCESS MACHINERY Corp
52 9th St., Brooklyn 15, N. Y. *Hy 9-7200*

BARGAIN ON AGITATORS

Vertical driven by 2 HP 1750 RPM 220/440 volt 3 phase enclosed motors has 8" 3 blade propeller never used at $65.00 each.

M. C. SOLON CO.
407 East Superior Co. Duluth 2, Minn.

FOR FILTERS YOU CAN RELY ON
MB MACHINERY AND EQUIPMENT CO.
123 Townsend St. • San Francisco 7, Calif.

FIRST CLASS EQUIPMENT from Your FIRST Source!

Send for the FMC Special Lists in Each of these Categories.

In New York Stock . . NEW S/S Jacketed Kettles, Tanks and Reactors.

MIXING EQUIPMENT of all types; Stirrers, Do and Mass Mixers; NEW or Rebuilt Ribbon Blenders in S/S or mild steel; all sizes.

Stainless Steel and Gl. Lined Reactors, Vacuum Pans, Percolators in all wanted sizes.

Dicers, Slicers, Peelers, Cutters and Hammer Mills by standard manufacturers.

Juice Extractors, Pulpers, Finishers, Clarifiers.

Filters and Filter Presses by all standard makers for every purpose. State needs.

FILLING EQUIPMENT for Liquids, Semi-Liquids, Pastes, Powders, Crystals.

Labelers, Can Packers, Case Sealers, Wrappers and other Packaging Items.

Complete Plants for Sale for many Products . . ready to work.

Send for Individual Lists or "First Facts" Inventory.

FIRST MACHINERY CORP.
209-289 TENTH STREET, BROOKLYN 15, N. Y.
PARKING ON THE PREMISES
PHONE: STerling 8-4672

OTTO W. *Cuyler* CORPORATION

WEBSTER, NEW YORK
Phone 370 or 270

Food Processing Machinery

For Sale

1 No. 10 Burt Labeler, Model AUPA.
2 Acme Silver Stitchers.
3 Allan Applesauce Machines; excellent for many fruits & vegetables.
1 FMC S.S. Pasteurizer, 30—1½" tubes.
1 No. 10 Panama Closing Machine.
1 FMC Continuous Steam Peeler (high pressure).
1 FMC Continuous Pressure Cooker No. 2 and 303.
1 No. 10 Weber Apple Filler.
12 Pease Double Apple Parers.
1 FMC Continuous Abrasive Peeler.
3 FMC Hand Pack Fillers for 8 oz., 303's, and 10's.
4 .006 Canco Closers for 2's, 2½'s, 300's, and 303's; perfect.
1 25 HP Amesteam Boiler, 100#, pump & return system.

New—Used—Rebuilt

1 Complete line equipment for custom cannery.
3 Boxers for 2's, 2½'s & 303's, Burt and Kyler.
2 Cabbage Corers, single & double, also Slicer.
1 11' Huntley Blancher, drum 2 yrs. old.
1 150-gal. S.S. Lee Tank with coils.
2 Apple Treating Tanks, S.S., 10' long.
1 Elgin Single Head Capper, 6 oz. to gallons.
2 Pfaudler S.S. No. 10 Juice Fillers.
1 FMC S.S. 46 oz. Juice Filler.
1 Pfaudler Steam Peeler, completely rebuilt.
1 Russell 16' Continuous Cooker; used one season.
Cider Presses, all sizes. Write for Details.

Write for 1959 catalog—10000 items

Serving the food processing industry since 1912

SPECIAL

75—**T316** STAINLESS Heat Exchangers, tubular, from 50 up to 200 sq. ft.

2—**Oliver** 5'3" x 3' rot. vacuum filters. T316 ss, ASME 25#
1—**Niagara** #510-28 vert. pressure-leaf filter, 500 sq. ft. T316 ss.
1—**Niagara** #36H-110-3, horiz. filter, 100 sq. ft. T304 ss.
2—**Sharples Super-D-Canters,** T316 ss.
2—**Bird** centrifugals, 18" x 28", 32" x 50", T304 ss.
1—**Sparkler** #33S-28 filter, T304 ss.
6—**Buflovak** double drum dryers; 42" x 120", 42" x 90", 32" x 72", 32" x 52".
5—**Louisville** rotary steam-tube dryers; 6' x 50', 6' x 30', 6' x 25'.
2—**Davenport** #1A dewatering presses.
2—**Vac. Shelf Dryers,** 108 sq. ft. T316 ss.
4—**Sharples, Super-D-Hydrators,** C-20, C-27, T316 ss.

T316 SS VACUUM TANKS: 6500, 2500, 1400, 1250, 560 gal.

PERRY EQUIPMENT Corp.
1411 N. 6th St. Phila. 22, Pa.
POplar 3-3503

USED MACHINERY & EQUIPMENT

3—RAYMOND 4' Mechanical Air Separators, dbl. whizzer type, for dry material
5—CONNERSVILLE Positive Pressure Blowers, 15—24 CF per rev.
4—SPENCER Turbo Compressor Type Exhaust Blowers, 24 oz., 3600 CFM
3—STURTEVANT Model 7 Blowers, dbl. width centrifugal fans, 54,350 CFM, 30 HP motor & controls
2—REVCO Industrial sub zero Refrigeration Cabinets, 5 Cu. Ft. Cap. Mod. SZ-40 Stock #25549
1—AMERICAN Type D Dust Collector, Size 24 Rotocione, hopper unit & skimmer, 40 HP motor
1—G.E. Drycoline Producer Unit, 200 CF per hour, Solas gas combustion controller, Type B, 650 CF per hr.
1—COLENDRIA Pan Unit. 11'8" w/condenser, vacuum, and reciprocating pumps
4—Hammer Mills: WILLIAMS & WHITE, 30 HP McKAIN Pulverizer, 12" x 12" intake #050A Type UB6 PREMIER Mill DIXIE, 40" x 24" Mill
2—BAKER PERKINS Mullers, complete w/drives, 100 HP
2—BYRON JACKSON Hydro Press Pumps, 213 GPM, 1800# press; direct connection to 250 HP motors
4—HONAN & CRANE Oil Purifiers, continuous type, Model 1224-A (2) NEW Mod. 1012AH & 1218A—Used
1—DeLaval Oil Purifier, Model 38-15 max. cap. 75 G.P.H.
1—CLEAVER BROOKS 125 HP horiz. oil fired high pressure Boiler, c/w burner & trim, A-1 condition, new 1950
3—ROSS Shell & Tube Condensers, Sizes 308-1S, 1209-1S, 1008-1S
1—INTERNATIONAL Enamel Ball Mill, 70" dia. x 83" long, 3600# cap; 3" McDaniel porcelain lining

TANKS

Heavy Duty Tank Car Tank, 8000 gal; w/heating coils, A-1 condition
8000 gallon vertical storage, like new
7000 gallon horizontal storage
7500 gallon vertical oil storage (2)
4000 gallon horizontal storage
70,000 Grade F, hydraulic accumulator, 26" dia. x 21" dia. x 21', #6F3726

AIR RECEIVERS

60 gallon, 250#—NEW (6)
Heavy duty 175# pressure capacity, 5' dia. x 22'

WE STOCK: Electric Motors & Controls to 750 HP, overhead cranes, blowers, boilers, mill exhausters, fans, hydraulic pumps, steam pumps, units & controls, and speed reducers, plus other miscellaneous items. WRITE . . . WIRE . . . PHONE—WE MAY HAVE IT!!

BEHR MACHINERY & EQUIPMENT CORP.
1254 Seminary St. Rockford, Illinois

MODERN REBUILT MACHINERY

UNION Rebuilt Machinery Established 1912

At Tremendous Savings

Baker Perkins 100 gal. Stainless Steel Sigma Blade Jacketed Mixer.
Package Machinery Models FA, FA-2, FA-3, FA-4 Wrappers. With and without Electric Eyes and Labeling Attachments.
Scandia SFS6F Automatic Wrappers with Electric Eyes. 140 per min.
Hayssen, Oliver, Package Machinery, Battle Creek, Hudson Sharp and Miller Wrappers—all sizes.
Pneumatic Scale High Speed Automatic Cartoning Lines with and without Liners and late style Tite Wrap.
Standard Knapp 429 Carton Sealers.
Geco 3901 Carton Sealers.
Baker Perkins, Day, W. & P. Heavy Duty Jacketed Mixers, 2 to 150 gal.
Fitzpatrick Models D and D6, S.S. Comminuters.
Mikro Models 1SH, 2TH, 3TH, 4TH Pulverizers.
Langsencamp Model A E-Z Adj. S.S. Pulper.
Fillers, Labelers, Cappers, all makes, sizes and capacities.

Complete Details and Prices on Request

UNION STANDARD EQUIPMENT CO.
318-322 Lafayette St. New York 12, N. Y. Canal 6-5333-4-5-6
167 N. May Street Chicago 7, Illinois Seely 3-7845

SPECIAL OFFERINGS

200 gal. S. S. Jacketed Kettle, 3 H. P. agitator
2500 gal. S. S. Vertical Tank, insul.
2760 & 3180 gal. S. S. Truck Tanks
200 gal. S. S. Tank, side agitator 36" x 48"
300 gal. S. S. Tanks top agitator
S. S. Plate Type Heat Exchangers
Worthington Air Compressor, 3 H. P.
1½" x 2" Waukesha Sanitary Pumps
50 gal. S. S. Tank, beater type agitator
15 to 50 H. P. Clayton Boilers
3 x 3 & 6½ x 6½ Ammonia Compressors
300 & 1000 gal. Horizontal Glass Lined Tanks
125 to 1500 gal. S. S. Homogenizers
#13 Robinson Mill 30 H. P.

"Send Us Your Inquir'es"

WE FLY TO BUY

LESTER KEHOE MACHINERY CORP.
2581 Richmond Terrace Staten Island 3, N. Y.
Gibraltar 7-3410

INGREDIENTS
For the Food Processor

CARROT OIL

makes food

golden yellow

Carrot oil, like butter, contains carotene. Carrot oil is extracted from carrots, and each pound contains up to 25 million units of carotene, the international standard of vitamin A activity.
Carrot oil is preferred for vitaminising foods because it is a natural vegetable oil and because it contributes vitamin A activity of high stability and desirable golden yellow color. Carrot oil is not synthetic, does not contain animal fats of any kind, and does not produce fishy flavor.

SEND FOR BOOKLET

New 36-page combined catalog on carrot oil for foods, feeds, and pharmaceuticals important reading for most food processors. Write today!

NUTRITIONAL RESEARCH ASSOCIATES
205 Broad St., South Whitley, Ind.

PROFESSIONAL SERVICES

FOOD DEVELOPMENT LABORATORY
S. W. ARENSON, Director

Ingredient evaluation ● New Products development. Specializing in flour shortenings, milk and other basic ingredient ●● Facilities, chemicals and physical laboratory, bakery, spray dryer and other unit process equipment.

5140 Reisterstown Road, Baltimore 15, Maryland — 57-01 32nd Avenue, Woodside L. I. 77, New York

LEWIN ASSOCIATES
Consultants

PLANT DESIGN AND LAYOUT—PROCESSING EQUIPMENT—PRODUCT AND PACKAGE DEVELOPMENT AND IMPROVEMENT—WAREHOUSING — DISTRIBUTION — MARKETING RESEARCH—ESTIMATES—REPORTS

1755 Broadway, New York 19, N. Y.
JUdson 6-1748-9

PALMER LABORATORIES
Flavor Consultants

Excellent Know-How. Over 25 years experience with all types of flavors and flavoring materials. Fine Laboratory and Plant facilities. We can develop new flavors or improve and duplicate your own flavors. We can make your flavors for you on cost plus basis. Also new product development and servicing. 723 West Pratt St. Balto 1. Md. Vernon 7-6253

SCHWARTZ LABORATORIES Inc.

Consultation on Food Problems
Analyses of Foods and Beverages
Food Plant Design and Process Improvement
Research and Investigations
Legal Testimony

Write for bulletin describing facilities and services
230 Washington St., Mount Vernon, N. Y.
Phone: MO 4-1100 — Cable: Swoknip

FOSTER D. SNELL
Research Laboratories

SENSORY PANEL TESTS
Food Analysis, Stability Studies, Evaluations, Packaging Problems, Vitamin Assays

Write For
"Food Facts"

29 W. 15th St., N. Y. 11 — WAtkins 4-8800

STRASBURGER & SIEGEL, INC.

Chemists—Bacteriologists—Food Technologists

Specialist in Canned and Glassed Foods Laboratory Services

Testing Tomato Products, Mayonnaise, Pickles, Oils, Fats, Beverages, Sugars, Filth in Foods, Food and Drug Libels, Expert Testimony

1403 Eutaw Place — Baltimore 17, Maryland

ADVERTISERS IN THIS ISSUE

Air Reduction Sales Co.
Div. of Air Reduction Co., Inc. 56-57
American Can Co., Canco Div. 37
American Optical Co.
Instrument Div. 103
American Viscose Corp., Film Div. 110
Angelus Sanitary Can Machine Co. 61
Anthony Engineering Co.,
William A. BR104
Aseptic-Thermo Indicator Co. TL120
Ashworth Bros., Inc. 130
Battle Creek Packaging
Machines, Inc. 128
Bausch & Lomb Optical Co. 4
Blaw-Knox Co.
Dairy Equipment Div. L102
Bliss Co., E. W. 16
Burt Co., F. L. BL116
Butler Mfg. Co. 114
Clark Equipment Co. 113
Clupak, Inc. 10-11
COG Corp., The
Div. of Motiograph, Inc. 126
Crown Cork & Seal Co., Inc. 106
Crown Zellerbach
Western Waxide Div. 139
Cyclone Fence Dept., Amer. Steel & Wire
Div., United States Steel ... BR111, TL116
Day Co., The J. H.
Div. of the Cleveland
Automatic Machine Co. 112
Dow Corning Corp. 64, BL100
du Pont de Nemours & Co., (Inc.)
Finishes Div. 121
Du Verre, Inc. TL134
Exact Weight Scale Co., The 140
Finnell System, Inc. 32
Firmenich Inc. 19
Fluidizer Co., The
Div. of Superior Separator Co. 20
Food Engineering 92-93
Food Machinery & Chemical Corp.
Canning Machinery Div. 6
FMC Packaging Machinery Div.
Stokes & Smith Plant 66
Foxboro Co., The 58
Frick Co. 76
Fritzsche Brothers, Inc. 38
Garlock Packing Co., The
Plastics Div. of Garlock
United States Gasket 119
Gaylord Container Corp.
Div. of Crown Zellerbach Corp. 30
General American Transportation Corp.
Dry-Flo Car Dept. 122
General Mills
Special Commodities Div. BL108
Globe Woven Belting Co., Inc. 99
Goodrich Industrial Products Co., B.F. .. 15
Gottscho, Inc., Adolph BL120
Greer Co., J. W. 34-35
Heyl & Patterson, Inc. TL100
Hoffmann-La Roche, Inc.,
Vitamin Div. 63
Howe Scale Co., The
Subsidiary of Safety Industries, Inc.. 17
International Salt Co., Inc. 118
Jamison Cold Storage Door Co. 124
Jefferson Chemical Co., Inc. R102
Jenkins Bros. 105
Kartridg-Pak Machine Co. L104
Kelco Co. 88
King Co. of Owatonna 133
Klenzade Products, Inc. 77
Knox Glass, Inc. 75
Kohnstamm & Co., Inc., H. 123
Ladish Co., Tri-Clover Div. 45
La Porte Mat & Mfg. Co. 53
Link-Belt Co. 8
Mack Trucks, Inc. 131
Manton Gaulin Mfg. Co., Inc. 26
Master Mechanics Co., The 44
McGraw-Hill Book Co. R108
Merck & Co., Inc. 68
Minneapolis-Honeywell Regulator Co.. 22-23
Modern Packaging BR134
Nash Engineering Co. 28
Nichols Engineering & Research Corp.
Nerco-Niro Spray Dryer Div. 9
Norda ..... Third Cover
Nutritional Research Associates 138
Oakite Products, Inc. 115
Olin Mathieson, Packaging Div. 117
Package Machinery Co. 55
Palmer Thermometers, Inc. 51
Paperlynen Co. BL134
Paterson Parchment Paper Co. 80
Pfaudler Permutit Inc.
Pfaudler Div. 50
Pfizer & Co., Inc., Chas.
Chemical Sales Div. 81
Red Star Yeast & Products Co. 132
Resina Automatic Machinery Co., Inc. TR111
Rheem 91
Riegel Paper Corp. 27
Robbins & Myers, Inc. 14
Sarco Co., Inc. 96
Scientific Dispensing Co.
Div. of Morton Salt Co. 101
Sheffield Chemical Div. of
National Dairy Products Corp. R129
Shulton Fine Chemicals
Div. of Shulton, Inc. 52
Sigmamotor, Inc. BR120
Spraying Systems Co. BL129
Sprout, Waldron & Co., Inc. 83
Stephens-Adamson Mfg. Co.
Engineering Div. 29
Sterwin Chemicals Inc. Subsidiary of
Sterling Drug Inc. ..... Second Cover
Stewart-Warner Corp., Alemite Div. ... 65
Sunkist Growers 12
Surface Combustion Corporation 5
Union Bag-Camp Paper Corp. 94-95
United States Plywood Corp. 69
United States Rubber Co.
Mechanical Goods Div. 78
Urschel Laboratories Inc. 36
U. S. Stoneware Co., The
Plastics & Synthetics Div. 31
Van Ameringen-Haebler
Div. of International Flavors &
Fragrances Inc. ..... Back Cover
Viking Pump Co. TL108
Vilter Mfg. Co., The 18
Wallace & Tiernan Inc. 90
Western Condensing Co. 98
Wheeling Stamping Co. 125
Wright Machinery Co.
Div. of Sperry Rand Corp. 82
Yarnall-Waring Co. 74
Yale & Towne Mfg. Co., The
Yale Materials Handling Div. 127

PROFESSIONAL SERVICES 138

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

EMPLOYMENT OPPORTUNITIES 135
EQUIPMENT
(Used or Surplus New)
For Sale 135-137
WANTED
Equipment 135

ADVERTISERS INDEX

Aaron Equipment Co. 135
Allied Equipment Co. 136
Behr Machinery & Equipment Corp. 137
Best Equipment Co., Inc. 136
Brill Equipment Co. 136
Chemical & Process Machinery Corp. .. 136
Cuyler Corp., Otto W. 137
Equipment Clearing House Inc. 136
First Machinery Corp. 137
Kehoe Machinery Corp., Lester 137
Laurence Inc., Charles 135
Loeb Equipment Supply Co. 136
Machinery & Equipment Co. 135, 136
Perry Equipment Corp. 137
RPM Inc. 136
Ruderman Machinery Exchange 136
Savage Brothers Co. 136
Siegler Bottling Co. 135
Solan, Mr. M. C. 136
Union Standard Equipment Co. 137

PUBLICATION HEADQUARTERS: 330 W. 42nd St., N. Y. 36, N. Y.

G. E. Riddell ..... Adv. Sales Mgr.
A. K. Porianda Prom. & Research Mgr. — J. Tsivgoulis ..... Business Mgr.

SALES REPRESENTATIVES

ATLANTA 3 ..... Robert H. Powell, Jr.
1301 Rhodes-Haverty Bldg.
BOSTON 16 ..... Carl Coash, Jr.
350 Park Square Bldg.
CHICAGO 11 ..... John G. Grant
520 N. Michigan Ave.
Raymond K. Burnet
CLEVELAND 13 ..... Tom E. Taylor
55 Public Square
DALLAS 1 ..... Gene Holland
1712 Commerce St.
DENVER 2 ..... John W. Patten
1740 Broadway
DETROIT 26 ..... John G. Grant
856 Penobscot Bldg. ... Tom E. Taylor
LOS ANGELES 17 ... Robert L. Yocom
1125 West Sixth Street
NEW YORK 36 ... Frank W. McCarthy
500 Fifth Avenue
Carl Coash, Jr.
PHILADELPHIA 3. Edward A. Martin
6 Penn Center Plaza
PITTSBURGH 22 ... Edward A. Martin
1111 Oliver Bldg.
SAN FRANCISCO 4 .... Scott Hubbard
68 Post St.
ST. LOUIS 8 ..... John G. Grant
Continental Bldg.
FRANKFURT/MAIN, GERMANY
M. R. Zeynel
85 Westendstrasse
LONDON E. C. 4, ENGLAND
E. E. Schirmer
95 Farrington Street

LABORATORY REPORT

Hygroscopic Packaging

Project 1201-A

NEW INSTANT APPLE SAUCE PACKAGE RESISTS MOISTURE, RETAINS VITAMINS

Vacu-dry Company, Oakland, California asked for help in developing a package for highly hygroscopic new product--instant apple sauce. Primary plans were to market through institutional channels. Vacu-dry considered cans but preferred the lower weight, lower cost, and convenience of Crown Poly Moistite bags. Vacu-dry extensively tested these bags and asked that similar tests be conducted at Western-Waxide's Product and Research Laboratory. Primary objective: to be sure protection was not being sacrificed to gain these other advantages.

TEST RESULTS: (High-Humidity storage--100°F 90% R.H.)

Moisture Gain: 1/2 of 1% - Excellent Granularity: Excellent

Vitamin Retention: Excellent

USE FEATURES: Easy opening--bag may be reclosed tightly to keep unused contents dry. Instructions and product information printed right on bag.

COST FACTORS

Material 48 % less than cans Weight 10 % less than cans

Space 23 % less than cans Packaging semi-automatic

#1201 - A

Product: Instant Apple Sauce

Producer: Vacu-dry Company, Oakland, California

Construction: Moistite Construction 2 PE-4

Printing: Flexographic Red, Green, Yellow

Dimensions: 7 lbs. (Equivalent to 1 case #10 cans wet product) 6 x 3¾ x 15¼

19 ozs. (Equivalent to a #10 can wet product) 3¾ x 2¼ x 9

Can you use packaging assistance like this? It's yours for the asking. Just write to Hygroscopic Packaging, 2101 Williams St. San Leandro, California.

CROWN ZELLERBACH
WESTERN-WAXIDE DIVISION

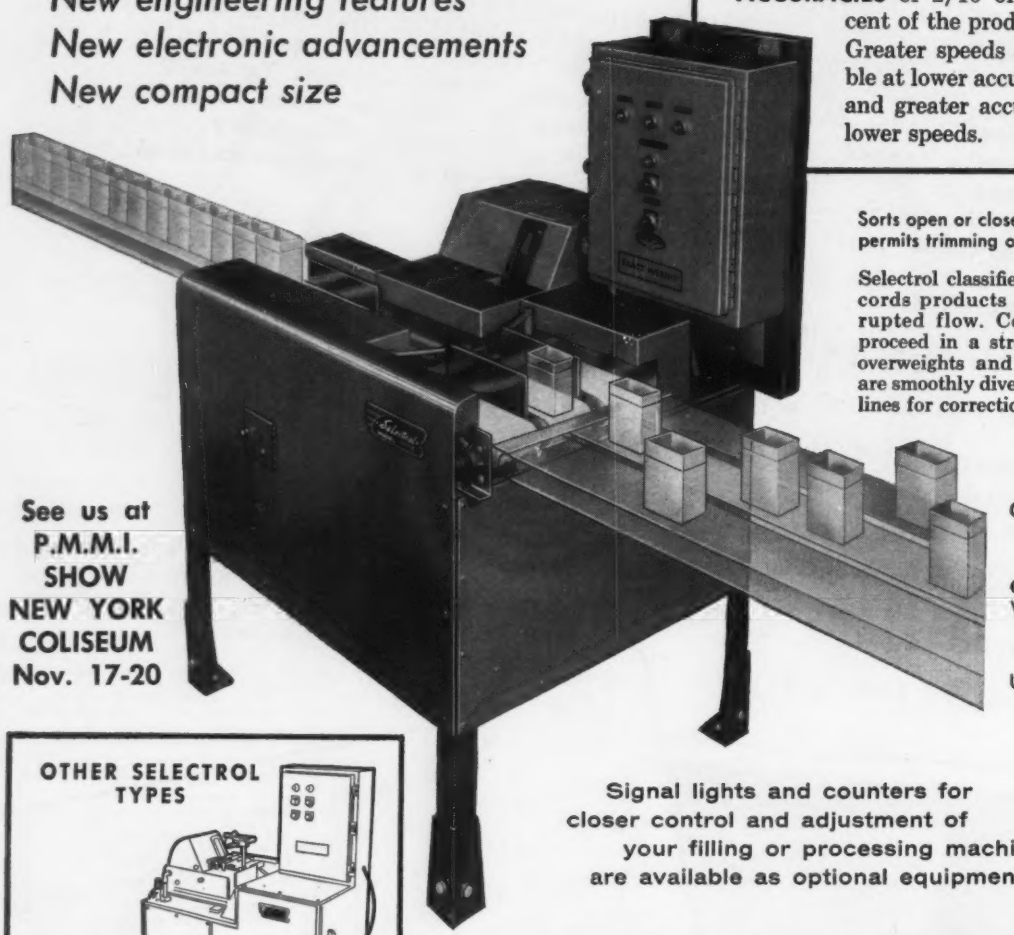
Exact Weight's New Automatic Checkweigher

New engineering features
New electronic advancements
New compact size

SELECTROL®
TYPE 1206

SPEEDS up to 120 weighings per minute.

ACCURACIES of 2/10 of one percent of the product. Greater speeds are possible at lower accuracies . . . and greater accuracies at lower speeds.



Sorts open or closed packages . . . permits trimming of rejects

Selectrol classifies, sorts and records products in an uninterrupted flow. Correct weights proceed in a straight line flow, overweights and underweights are smoothly diverted to separate lines for correction or trimming.

OVERWEIGHTS

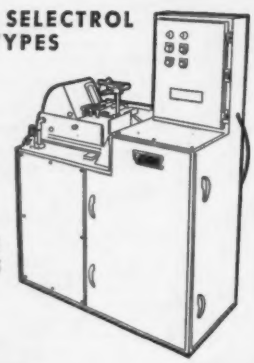
CORRECT WEIGHTS

UNDERWEIGHTS

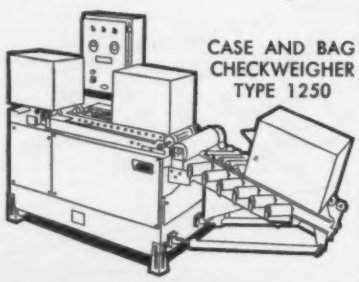
See us at P.M.M.I. SHOW NEW YORK COLISEUM Nov. 17-20

Signal lights and counters for closer control and adjustment of your filling or processing machines are available as optional equipment.

OTHER SELECTROL TYPES



TYPE 1245



CASE AND BAG CHECKWEIGHER TYPE 1250

This new Selectrol Checkweigher, field tested and proven, is engineered to maintain the highest degrees of accuracies with relation to realistic speed requirements of most production lines. Operation is completely automatic. Tolerances are adjustable.

Selectrols are made by Exact Weight, a manufacturer of scales for 45 years, with experience gained through hundreds of checkweighing installations during the past 18 years in 28 states and in foreign countries. Write today for complete information on Selectrol and the advantages it can offer you.

THE EXACT WEIGHT SCALE CO.

910 W. FIFTH AVE., COLUMBUS 8, OHIO

In Canada: 5 Six Points Road, Toronto 18, Ont.

Sales and Service Coast to Coast

Exact Weight SCALES

Find us in your local 'Yellow Pages'

Reader Service . . .

FOR MORE INFORMATION CIRCLE NUMBERS ON CARD

For more facts about equipment and supplies cited in editorial pages or advertisements,
Or copies of catalogs mentioned on Just Off the Press or Advertisers' Literature—
Note key numbers on those items, circle same numbers on Reader Service card, and mail.
Reprints available are listed on next page. Three are free.

ADVERTISERS' LITERATURE

Materials Handling

Bulk trucks, pneumatic. Bul. 203, Sprout-Waldron—448
Conveyors, pneumatic. Bul. I-28, Sprout-Waldron—449
Conveyor belts. Literature, Globe Woven Belting Co. —450
Conveyor belts. Cat. No. 5, U.S.S., Amer. Steel & Wire—451
Conveyor belts, flexible steel. Literature, La Porte Mat & Mfg. Co.—452
Food handling equipment. Literature, Stephens-Adamson Mfg. Co.—453
Process belts, metal. Illus. literature, Ashworth Bros. —454

Processing Equipment

Centrifugals. Bul. 356, Heyl & Patterson—455
Dispersers, sub-micron. Bul. SMD-55, Manton Gaulin—456
Homogenizers. Bul. H-55, Manton Gaulin—457
Homogenizers, laboratory. Bul. LH-55, Manton Gaulin—458
Milk drying pilot plants. Bul. 590, Blaw-Knox Co.—459
Mixers. Information, Wm. A. Anthony Eng. Co.—460
Processing equipment. Catalogs, J. H. Day—461
Tanks, fabricated, open vessels & hoods. Bul. No. 100, du Verre—462

Pumps

Metering & feed pumps. Information, Sigmamotor—463
Pumps, food. Bul. 34 FE, Robbins & Myers—464
Pumps, rotary. Cat. ME, Viking Pump Co.—465

Pipes, Traps, Tubing

Spray nozzles. Data sheets, Spraying Systems Co.—466
Steam traps. Book, Yarnall-Waring Co.—467
Tygon tubing. Bul. T-97, U. S. Stoneware—468

Air Conditioning & Compressors

Air conditioning units. Bulletins, King Co. of Owatonna—469
Compressors, ammonia. Bul. 817, Vilter Mfg. Co.—470

Lubrication

Lubricator. Catalog, Stewart-Warner—471

Controls & Instruments

Batchplugs. Folder, Howe Scale Co.—472
Instrumentation. Application Engineering Data, Foxboro Co.—473
Refractometers. Brochure SB 10125, American Optical Co.—474
Refractometers. Cat. AD-280, Bausch & Lomb Optical Co.—475
Scale feeders & meters. Literature, Wallace & Tiernan—476
Temperature regulators. Bul. No. 620, Sarco Co.—477

WRITE YOUR name, address and other pertinent information on card. Use of cards is restricted to food manufacturing management and consultants.

PLEASE TYPE OR PRINT—GIVE COMPLETE INFORMATION

Name .....

Position ..... Product .....

Company ....

Street .....

City ..... Zone .... State .....

FIRST CLASS
(Sec. 34.9 P.L.&R.)
PERMIT No. 64
NEW YORK, N. Y.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

6¢ POSTAGE WILL BE PAID BY—
FOOD ENGINEERING
READER SERVICE DEPARTMENT
330 WEST 42nd ST.
NEW YORK 36, N. Y.

PLEASE TYPE OR PRINT—GIVE COMPLETE INFORMATION

Name .....

Position ..... Product .....

Company ....

Street .....

City ..... Zone .... State .....

FIRST CLASS
(Sec. 34.9 P.L.&R.)
PERMIT No. 64
NEW YORK, N. Y.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

6¢ POSTAGE WILL BE PAID BY—
FOOD ENGINEERING
READER SERVICE DEPARTMENT
330 WEST 42nd ST.
NEW YORK 36, N. Y.

USEFUL REPRINTS—3 FREE*

Write Key Number on Reader Service Card

FE Analysis: Interurbia—Brand-Battle Salient (p. 46)	Free	O-1
Finds Cap Liner Faults Quickly (p. 59)	Free	O-2
Graphic Panels Automate Bulk-Food Operation	Free	O-3
Switch to Pictorial Packages	35¢	A-10
Plan '59, Modernize Now	75¢	A-12
Tailor Made Milk Protein Solids	20¢	B-2
These Nomographs Simplify Syrup Calculations	35¢	B-3
Map for Market Progress	20¢	D-2
Sterilizer Ups Correct Food Quality	35¢	F-3
Are You Set to Ride the Youth Boom	35¢	J-1
Food Colorimetry	75¢	J-2
Your 'Ray' Way to Better Control	35¢	K-3

* One free per reader. Offers good only while limited supply lasts. Send no money with order for priced reprints.

SEPTEMBER, 1959 CIRCLE KEY NUMBERS, FILL IN REVERSE SIDE, MAIL Expires December, 1959

Number with * covers two or more items. Write it in space at bottom and name item wanted.

ADVERTISEMENTS				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26*	27	28	29	30	31	32	33	34	35	36	37	38
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82*	83*	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101
102	103	104	105	106	107	108	109	110	111	112*	113	114	115	116	117	118	119	120	121	122
123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164
165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185
186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206
207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227
228	229	230	231*	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248
249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269
270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299												
NEW PACKAGES & PRODUCTS					300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
EQUIPMENT			316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333
334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354
355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
376	377	378	379	380	381	382	383	384	385	386	387									
JUST OFF PRESS			388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405
406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426
427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447
ADVERTISER'S LITERATURE					448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463
464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500					

*MULTIPLE ITEMS *Key No..... Item..... *Key No..... Item..... *Key No..... Item.....

REPRINTS: Key No..... Quantity..... Key No..... Quantity..... ANNUAL FE INDEX Quantity.....

SEPTEMBER, 1959 CIRCLE KEY NUMBERS, FILL IN REVERSE SIDE, MAIL Expires December, 1959

Number with * covers two or more items. Write it in space at bottom and name item wanted.

ADVERTISEMENTS				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
18	19	20	21	22	23	24	25	26*	27	28	29	30	31	32	33	34	35	36	37	38
39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82*	83*	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101
102	103	104	105	106	107	108	109	110	111	112*	113	114	115	116	117	118	119	120	121	122
123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164
165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185
186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206
207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227
228	229	230	231*	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248
249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269
270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299												
NEW PACKAGES & PRODUCTS					300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315
EQUIPMENT			316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333
334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354
355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
376	377	378	379	380	381	382	383	384	385	386	387									
JUST OFF PRESS			388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405
406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426
427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447
ADVERTISER'S LITERATURE					448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463
464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484
485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500					

*MULTIPLE ITEMS *Key No..... Item..... *Key No..... Item..... *Key No..... Item.....

REPRINTS: Key No..... Quantity..... Key No..... Quantity..... ANNUAL FE INDEX Quantity.....

Ingredients

Algin colloids. Tech. data, Kelco Co.—478

Flavors, powdered. Tech. information, Firmenich—479

Lactose. Bulletins, Western Condensing Co.—480

Milk proteins. Tech. data, Sheffield Chem.—481

Propylene glycol. Information, Jefferson Chem. Co.—482

Proteins. Information, General Mills—483

Packaging Machinery

Can casers. Information, F.M.C., Canning Mach. Div.—484

Fillers, piston. Circular, F. L. Burt Co.—485

Fillers, rotary piston. Literature, Pfaudler—486

Imprinters. Bul. RIN-7, Gottscho—487

Liquid dispensers. Information, Morton Salt Co.—488

Screw cappers & fitment applicators. Literature, Resina Automatic Mach. Co.—489

Packaging Materials

Corrugated boxes. Booklet, Union Bag-Camp Paper Corp.—490

Grease-proof papers. Tech. information, Paterson Parchment Paper Co.—491

Liquid dispensers. Information, Wheeling Stamping Co.—492

Fabrication, Insulation, Maintenance Materials

Teflon linings. Cat. AD 158, Garlock Packing Co.—493

Freezer doors. Bulletin, Jamison Cold Storage Door Co.—494

Plywood. Booklet, U. S. Plywood Corp.—495

Paints, mildew resistant. Literature, du Pont, Finishes Div.—496

Sanitation & Cleaning

Chlorinators. Details, Wallace & Tiernan—497

Cleaners. Bul. B-8165, Oakite Products—498

Management

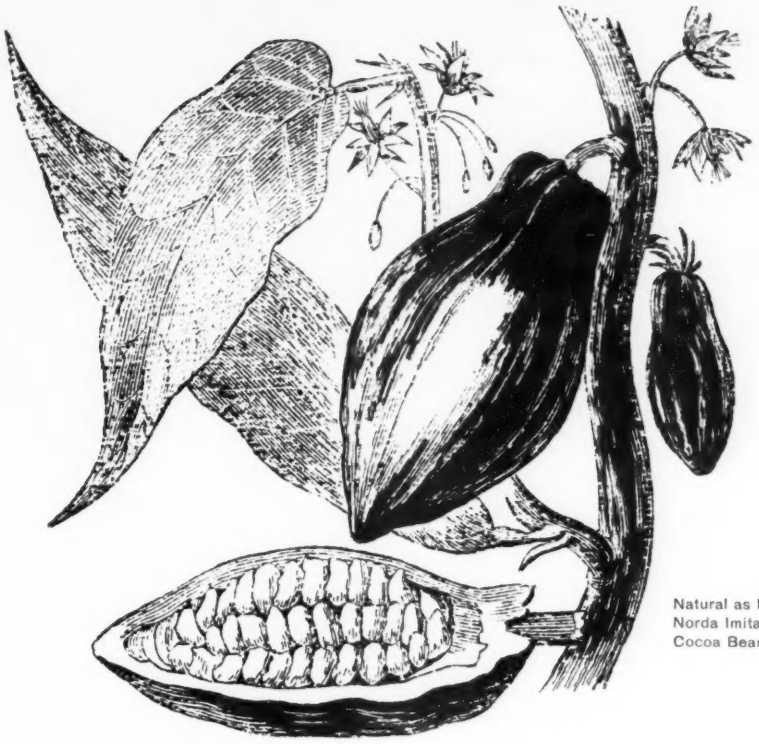
Food & Drug Law Amendment. Report, Modern Packaging—499

See JOP for More

MANY MORE bulletins, booklets and brochures available from manufacturers are listed in the Just Off the Press section on page 125.

Divided into categories such as Sanitation and Packaging, these items are keyed for your convenience. Look them over.

If you're interested in a particular booklet, just circle the key number on the attached card.



Natural as Nature's,
Norda Imitation
Cocoa Bean Oil

CUT YOUR COSTS
KEEP YOUR CUSTOMERS

USE *Norda*

IMITATION COCOA BEAN OIL

SAVE! SUBSTITUTE! NEVER SACRIFICE!

Rich, real-tasting Chocolate-Cocoa Flavor and Aroma

Now, from Norda—Same intense aroma, fine flavor, delicate taste that distinguishes fresh-roasted Cocoa Beans

From Norda, now—To give you exceptionally rich Chocolate and Cocoa effects in Pudding Mixes • Chocolate Syrups • Chocolate Coatings Starch-type Puddings • Cream Centers • Cream Cookie Fillings

Now, from Norda—The money-saving booster flavor that enriches the taste of all Cocoa Bean products

SAVE
BE SURE *Norda*®

601 West 26 Street, New York 1, N. Y.

Flavor It With a Favorite

Chicago • Los Angeles • San Francisco • Toronto • Montreal • Havana • London • Paris • Grasse • Mexico City

EXCEPTIONAL

Table setting by
Tiffany, N.Y.

Good Taste!

A recently developed vegetable extraction provides a fullness and roundness comparable to the finest pure bourbon vanilla extract in

Alvan

A recent contribution of the Alva Flavors Laboratories. Not the usual vanillin-type of imitation flavor, Alvan achieves a full-bodied taste at an economical price for every vanilla flavored food.

Test this unusual new basic flavor! Production samples at your request along with suggested use recommendations.

Alvan is available in strengths comparable to 1X, 2X, 4X, 6X, 8X, and 10X pure vanilla extracts.

Alvan 4 fold is priced at $7.50 per gal (24 gals)

van Ameringen-Haebler

A DIVISION OF INTERNATIONAL FLAVORS & FRAGRANCES INC.
521 West 57th Street, New York 19, New York

Alva FLAVORS

LEADING CREATORS AND MANUFACTURERS IN THE WORLD OF FLAVOR

CIRCLE 144 ON READER SERVICE CARD